Industrial Grade 3G 4G Dual SIM Cellular Router

User Manual

H720 Series

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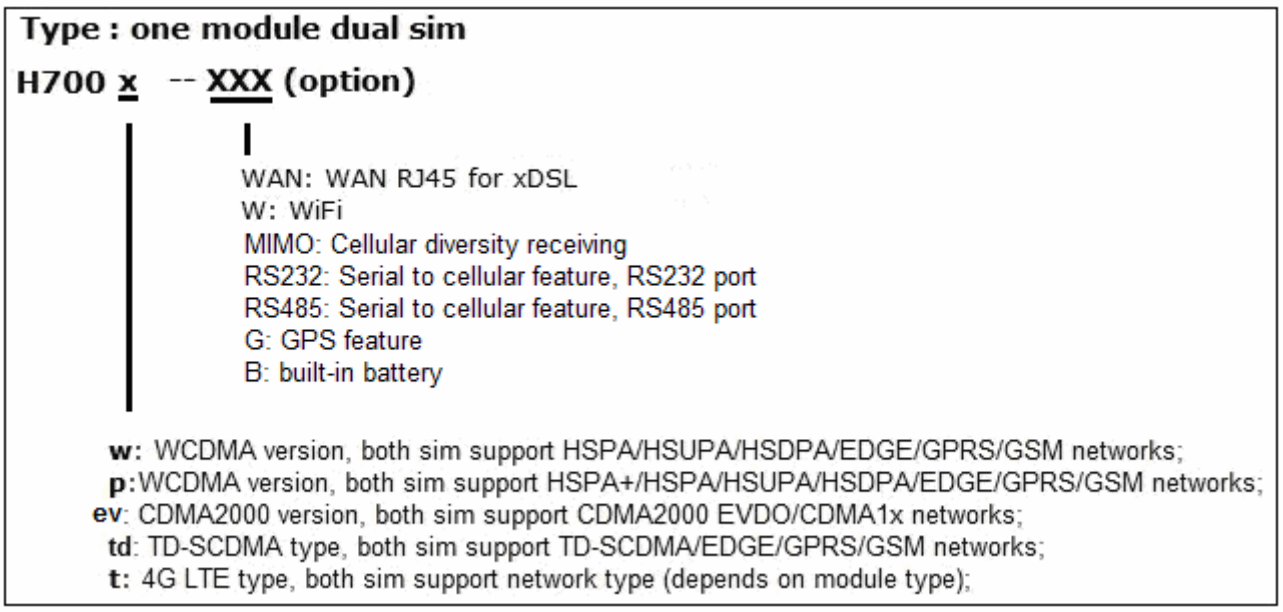
Chapter 1

1 Preparation job before configuration

1.1 Learn your router version and feature

1) H720 series contains different version and option feature. Please learn it before using it.

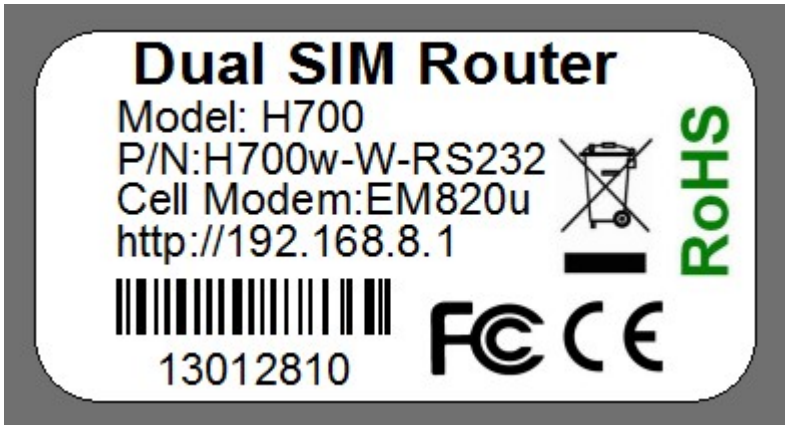
H720 series defines the model as follows,


Type : one module dual sim
H700 x -- XXX (option)
WAN: WAN RJ45 for xDSL
W: WiFi
MIMO: Cellular diversity receiving
RS232: Serial to cellular feature, RS232 port
RS485: Serial to cellular feature, RS485 port
G: GPS feature
B: built-in battery
w: WCDMA version, both sim support HSPA/HSUPA/HSDPA/EDGE/GPRS/GSM networks;
p:WCDMA version, both sim support HSPA+/HSPA/HSUPA/HSDPA/EDGE/GPRS/GSM networks;
ev: CDMA2000 version, both sim support CDMA2000 EVDO/CDMA1x networks;
td: TD-SCDMA type, both sim support TD-SCDMA/EDGE/GPRS/GSM networks;
t: 4G LTE type, both sim support network type (depends on module type);

Notes: please be informed the following features are option. Please indicate with your orders.

1) Cellular diversity receiving
2) WiFi Feature
3) GPS feature
4) Serial to cellular feature, RS232 or RS485 can choose one
5) Default input power support DC5V~40V, option is DC5V~50V
6) BGP, OSPF, RIP, Zebra, etc.
7) Internal rechargable battery

2) Find the modem type info at the back cover of the router. This will be used while do configuration.
For example: the following label indicates the version, type and inside module modem.
The module modem name is “EM820u”, remember this and will select this module name while do configuration.



1.2 Prepare SIM Card and working condition

1) For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE networks or TD-SCDMA networks, please get a SIM card with data business.
2) For CDMA2000 EVDO/CDMA1x networks, please get a UIM card with data business or inform us before order if the network uses non-ruim (nam-flashing).
3) Make sure the sim card or uim card is with enough data business and balance.
4) Make sure the signal is good enough where you test or install the router. Weak signal will make the router no work. If you find your signal strength is not good, please contact us for high gain antenna.
5) Different carriers from different countries use different band and frequency. Our packed antenna is a world-wise-use type. It may not get good speed at your sites. Please try to get local high-gain dedicated antenna for your sites. The local dedicated antennas are made for your carriers which can get much better data speed sometimes.
If you want dedicated local high-gain antenna for your sites, E-Lins can do the OEM/ODM, but only for bulk orders. Thanks!

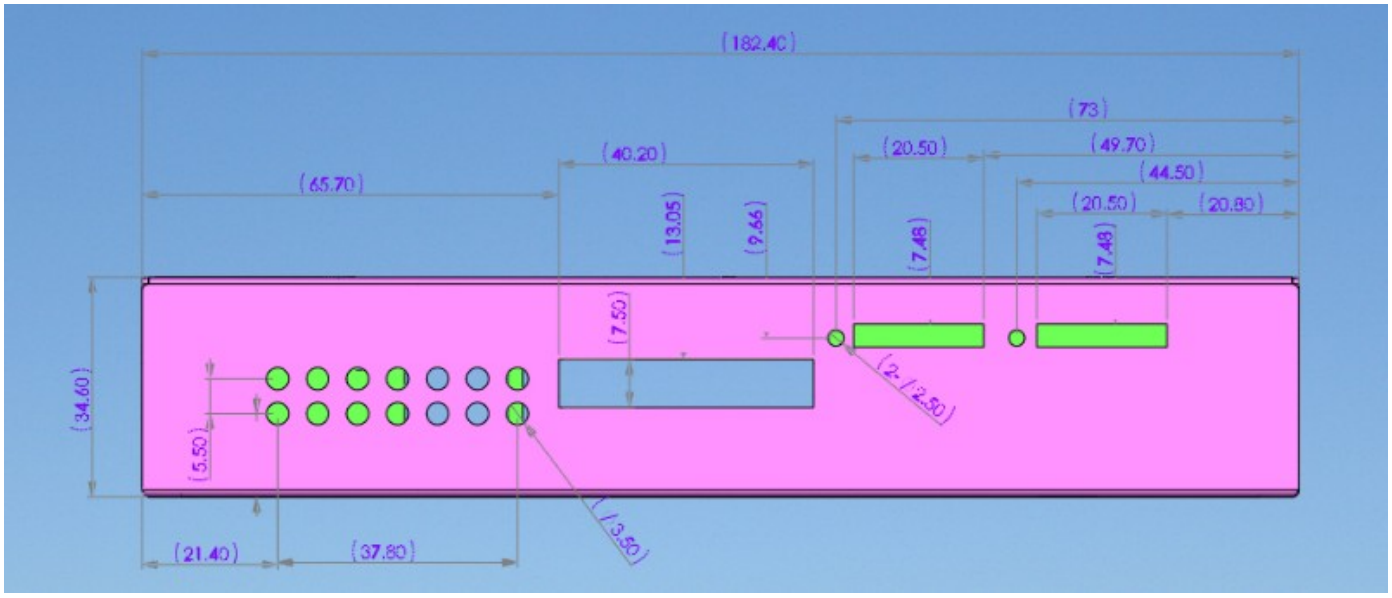
Chapter 2

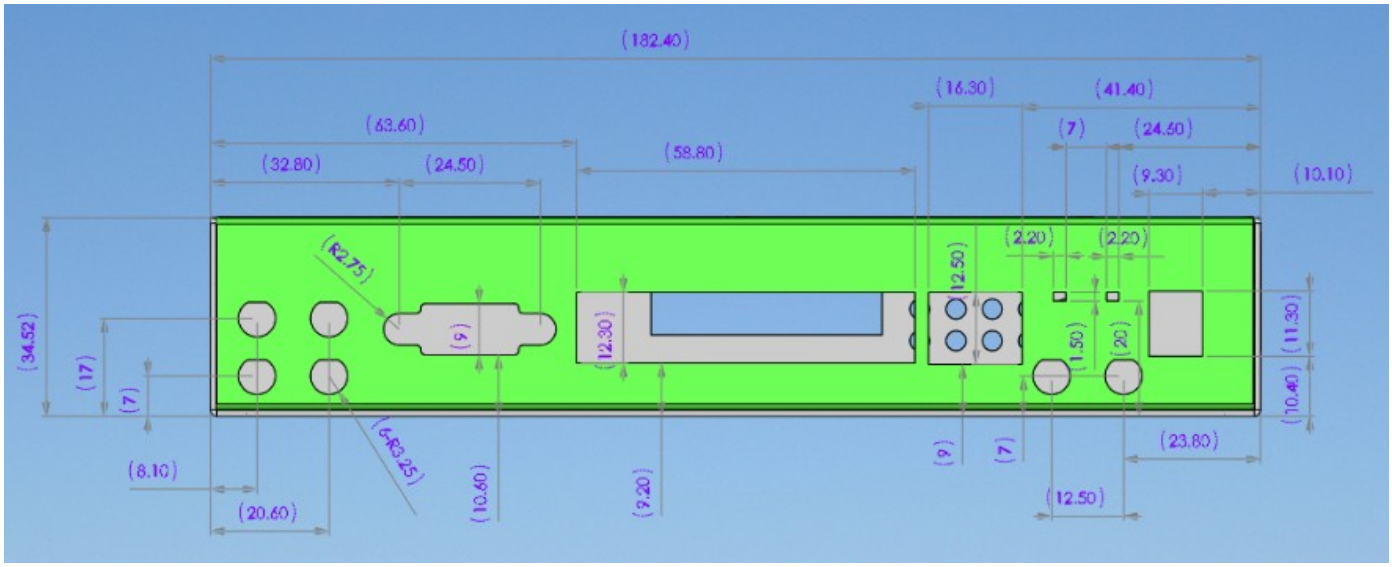
2 Hardware Installation

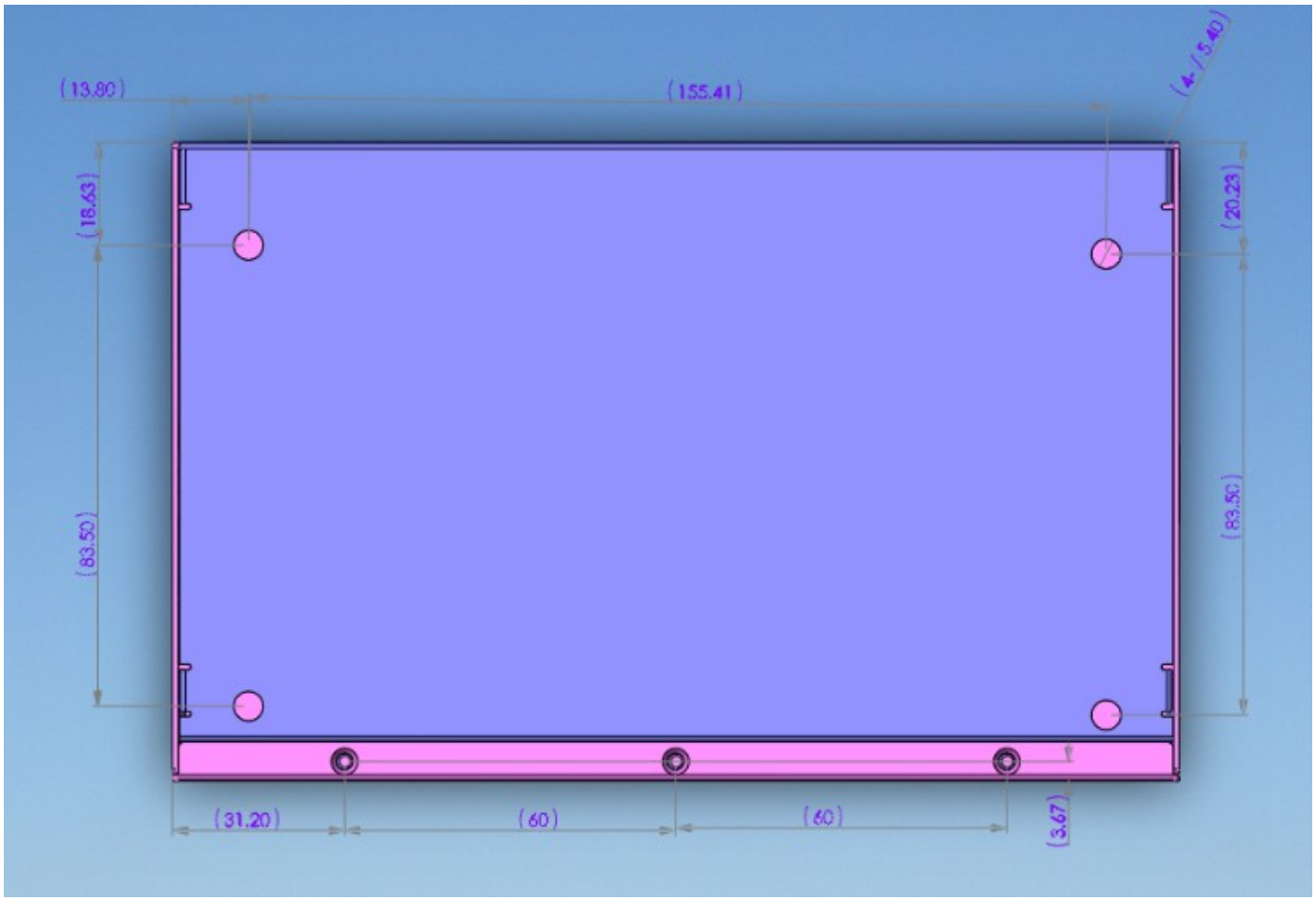
This chapter mainly describes the appearance, model and function of H720 series and how to install and set the configurations.

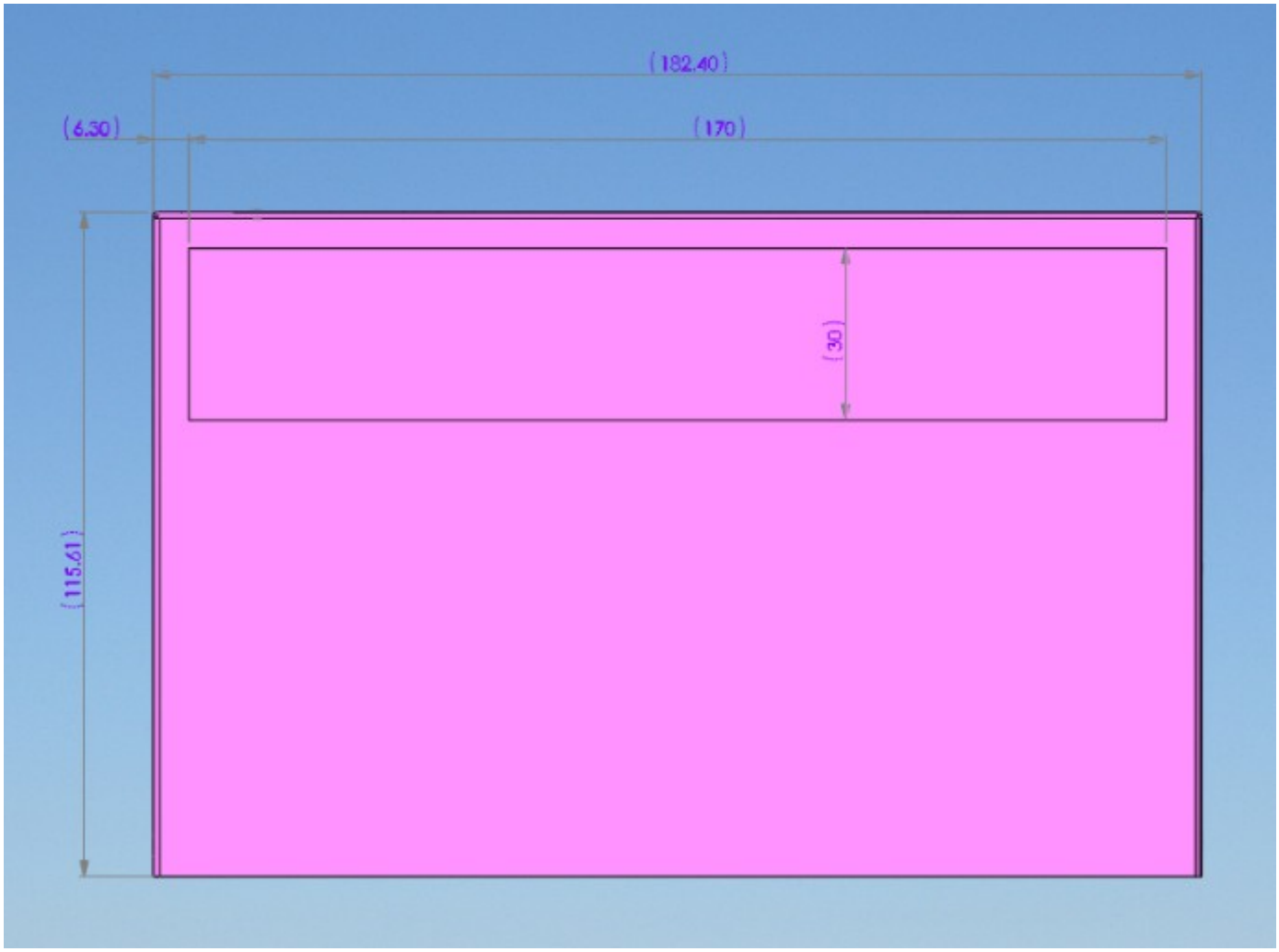
1. *Overall Dimension*
2. *Accessories Description*
3. *Installment*

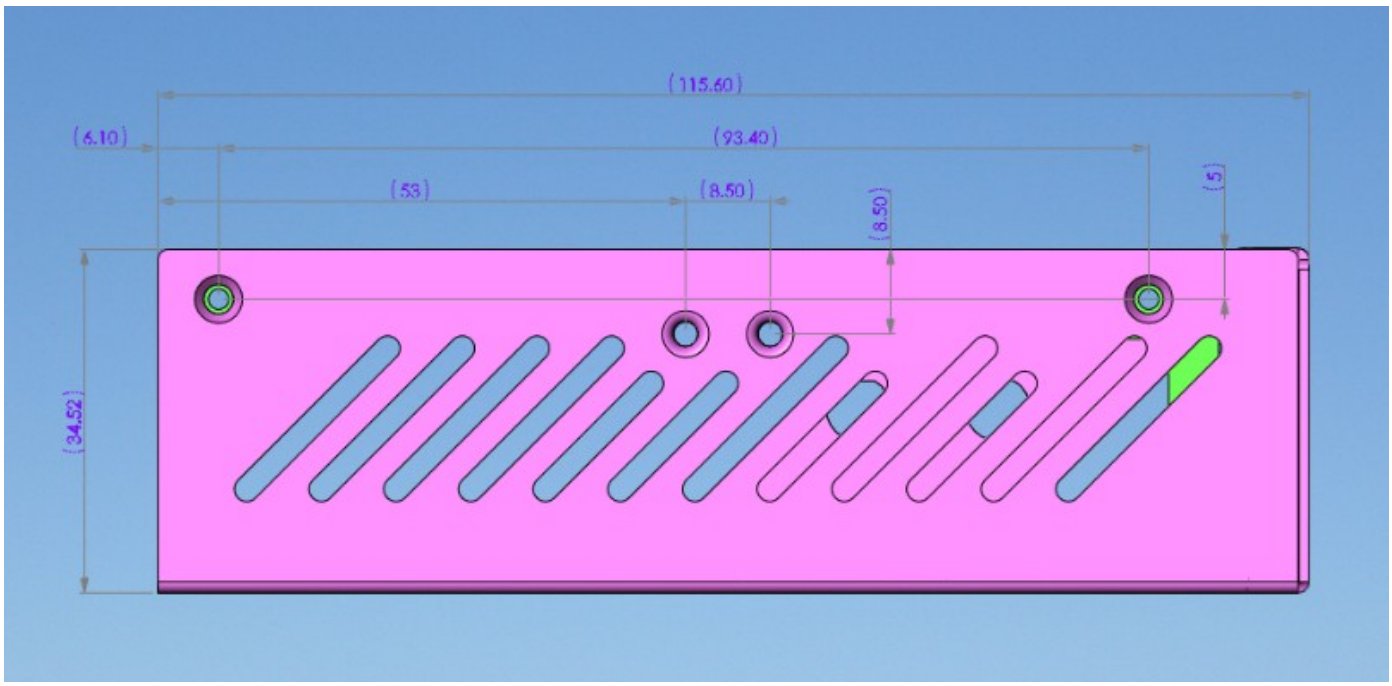
2.1 Overall Dimension

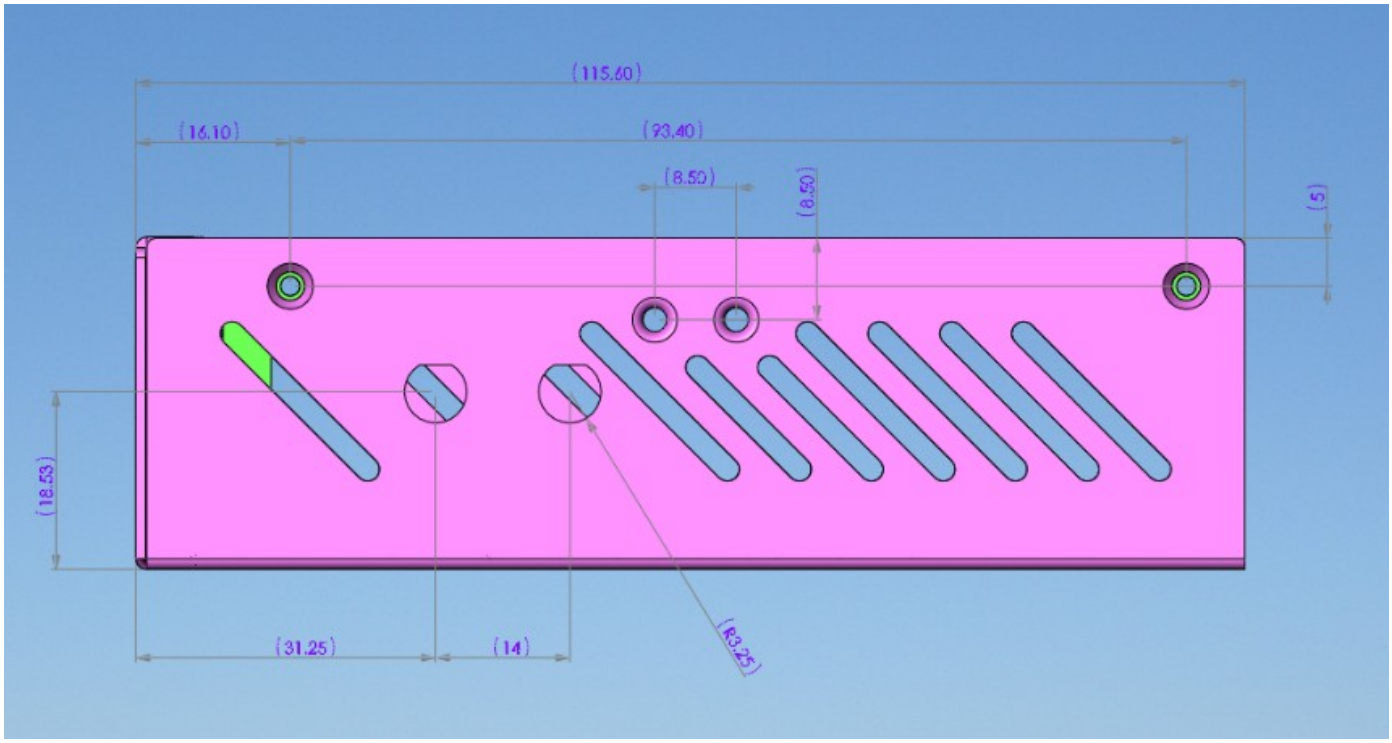





(13.80)
(155.41)
4-(5.40)
(18.63)
(20.23)
(83.50)
(83.50)
(31.20)
(60)
(60)
(3.67)


182.40
6.30
170
30
115.61


115.60
6.10
93.40
53
8.50
8.50
5
34.52



2.2 The Ports

Back Picture:

CELL1: for cellular radio module 1 main
AUX1: for cellular radio module 1 auxiliary
CELL2: for cellular radio module 2 main
AUX2: for cellular radio module 2 auxiliary
WiFi1: for WiFi antenna1
WiFi2: for WiFi antenna2
COM: DB9 for serial port.
LAN1~LAN4: LAN RJ45 Ethernet ports.
WAN: WAN RJ45 Ethernet ports.
RST: sys reset button
WPS: WiFi WPS button
PWR: DC power socket. DC5~40V, DC5~50V option depends on the router version.

Front Picture:

SIM1: SIM card 1 slot
SIM2: SIM card 2 slot
TX: serial transfer
RX: serial receiving
NC: not connected
DIO1: Digital input/output1
DIO0: Digital input/output0
RST: for reset signal input
GND: serial/IO ground
GND (next to VCC): DC wire groud
VCC: DC wire positive pole. DC5~40V, DC5~50V option depends on the router version
Cell1: SIM card 1 cell status LED
S1: SIM card 1 signal strength LED
Cell2: SIM card 2 cell status LED
S2: SIM card 2 signal strength LED
Lan4: LAN RJ45 port4 LED
Lan3: LAN RJ45 port4 LED
Lan2: LAN RJ45 port4 LED
Lan1: LAN RJ45 port4 LED
SYS: system power indicator LED
VPN: VPN LED
WiFi: WiFi indicator LED
WPS: WPS LED
WAN: WAN RJ45 port4 LED

Side Picture:

GPS1: GPS antenna1
GPS2: GPS antenna2

2.3 Installment

H720 series should be installed and configured properly before putting in service. The installation and configuration should be done or supervise by qualified engineer.

Attention:

Do not install H720 series or connect/disconnect its cable when it is power on.

2.4 SIM/UIM card installed

If your router has SIM/UIM card protector, please remove it, insert the sim card correctly, and fix the protector.

If your router has no SIM/UIM card protector, please insert the sim card correctly.

Attention: *SIM/UIM card does not reach the designated position, the equipment can not find a card, can't work normally, therefore inserted a try to check again for a SIM card is stuck fast.*

2.5 The installation of terminal blocks

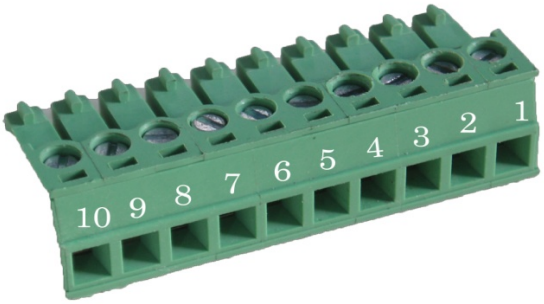
This chapter is for version with terminal blocks only. Default, the H720 is with DB9 connector. Please use DB9 cable to connect H720 and the equipment directly.

The following is for version with terminal blocks only:

H720 uses pluggable terminals to connect the user's data and the power supply. Spacing: 3.81mm，10 Pin; User data and power supply suggestion: 14~24AWG. Please refer to the table 2-4 for the interface definition of the power cable and connection sequence. Specific

interface definition of the power cable and connection sequence you can read on the labels of H720 products. Using 14~24AWG cable and referring to H720 products labels or the bellowed interface definition and connection sequence, you need to use the oblate screw driver to fix the cable to the connecting jacks of the pluggable terminal. After successfully connection, you need to insert the terminal into the corresponding position in the bottom of the H720 products.

Notes: Connection sequence should be accurate。Cable's insulating striping length is about 7mm. (For safety, insulating striping length should be too long). Please refer



to the picture.

Attention:

1. *The power cable should be connected correctly. We "suggestion double check before switch it on .Wrong connections may destroy the equipment.*
2. *Power terminals: Pin 1 and Pin 2;*
3. *Here： Pin 2 is "GND", PIN 1 is power input "Vin"(DC5~40V, or DV5~50V).*

PIN	Signal	Description	Note
1	VCC	+5-40V DC Input, +5~50V option	Current：12V/1A
2	GND (next to VCC)	Ground	
3	GND	Serial/IO ground	
4	RST	Reset	Reset Pin has the same function with reset button. In the usage, it needs to be short connected to the GND. After giving the device a 1 sec low level, it will reboot.3 seconds, the

			device will restore factory settings
5	DIO0	General Purpose I/O	
6	DIO1	General Purpose I/O	
7	NC	Not connect	
8	NC	Not connect	
9	RX	Receive Data	
10	TX	Transmit Data	

I/O Terminal on router	Serial port (RS485 or RS232)
Port 3 (GND)	Pin 5
Port 9 (RX)	Pin 2
Port 10 (TX)	Pin 3

Notes: If serial is not through, can try following.

I/O Terminal on router	Serial port (RS485 or RS232)
Port 3 (GND)	Pin 5
Port 10 (RX)	Pin 2
Port 9 (TX)	Pin 3

2.6 Grounding

To ensure a safe, stable and reliable H720 series operation, Router cabinet should be grounded properly.

2.7 Power Supply

H720 series can be applied to complicated external environment and usually the power range is very large. So in order to fit the complicated application environment and improve the stability of the system, H720 series is designed with advanced power management technology. The DC power supply electronic to the device via the pluggable terminal PIN 2(GND) and PIN 1(Vin). Please refer to the above table for the detail definition of the terminal.

Normally, H720 series input powers supply is +5～+40V (if your H720 support 50V, the

option is +5~+50V). In most cases, the standard configuration is 12V/1A.

2.8 LED and Check Network Status

Please connect the antenna after you successfully connect to the cable. And then insert the valid SIM/UIM card and provide the power to the H720 series via the cable. After provide the power to H720, if the SYS LED starts to blink in a few seconds, that means the system start-up is normal; if the CELL LED works, that means the network is online; if the VPN light works, that means VPN tunnel has been set up. Please refer to the below table for the situation of the indication lights.

LED	Indication Light	Description
SYS	On for 25 seconds	On for 25 seconds after power supply
	blink	System set-up normally
	Off or still on after 25 seconds	System set-up failure
LAN1~ LAN4	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
	On	Ethernet is connected
VPN	On	VPN tunnel set-up
	Off	VPN tunnel set-up failure or unactivated
Cell1 & Cell2	On	Access to the Internet
WIFI	On	Enable
	Off	Disable
WAN	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
	On	Ethernet is connected
CHR	On	Internal battery is charging
	Off	Internal battery not charging
S1 & S2	Off	No signal, or signal checking is not ready
	4s blink 1 time	Signal bar is 1
	3s blink 1 time	Signal bar is 2
	2s blink 1 time	Signal bar is 3

	1s blink 1 time	Signal bar is 4
	1s blink 2 times	Signal bar is 5

Chapter 3

3 Software configuration

3.1 Overview

H720 series routers with built-in WEB interface configuration, management and debugging tools, user should configuration the parameters first; and it could be altered the parameters flexibility and software upgrades and simple testing. User can set up and manage the parameters of the router on its interface, detail step are bellow:

3.2 How to log into the Router

3.2.1 Network Configuration of the Computer.

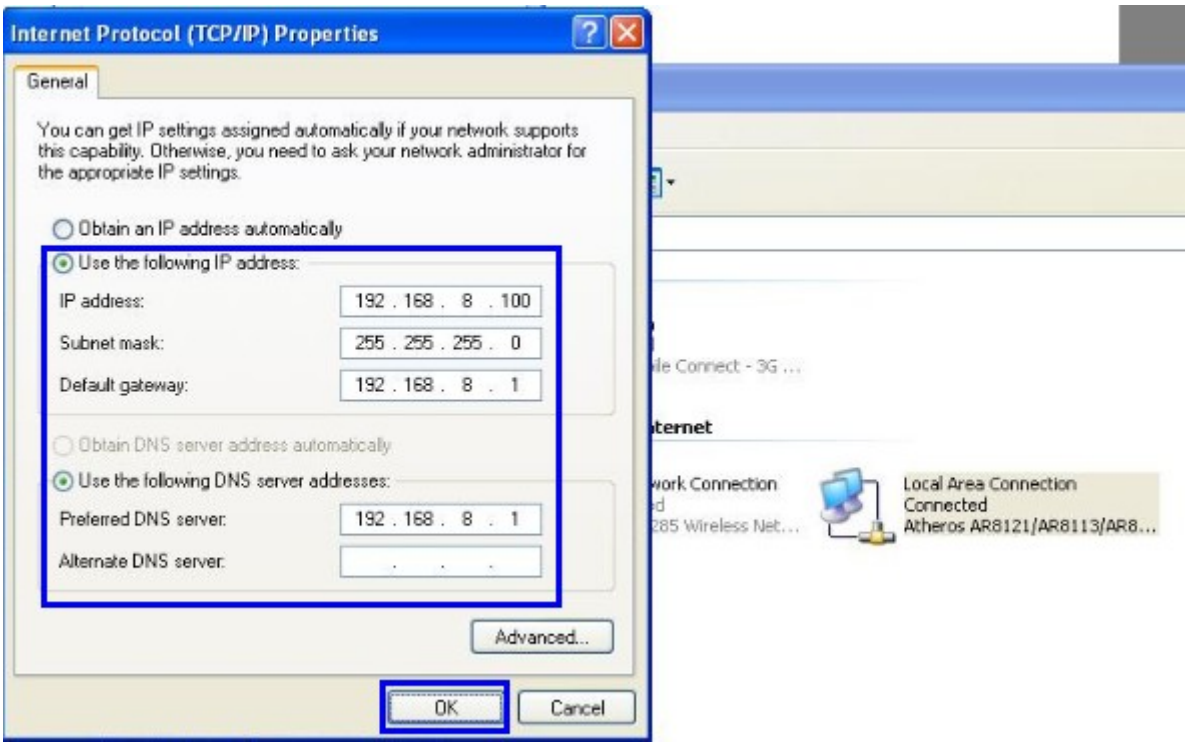
The router default parameters as follow

Default IP: 192.168.8.1, sub mask: 255.255.255.0.

There are two ways to set the PC's IP address.

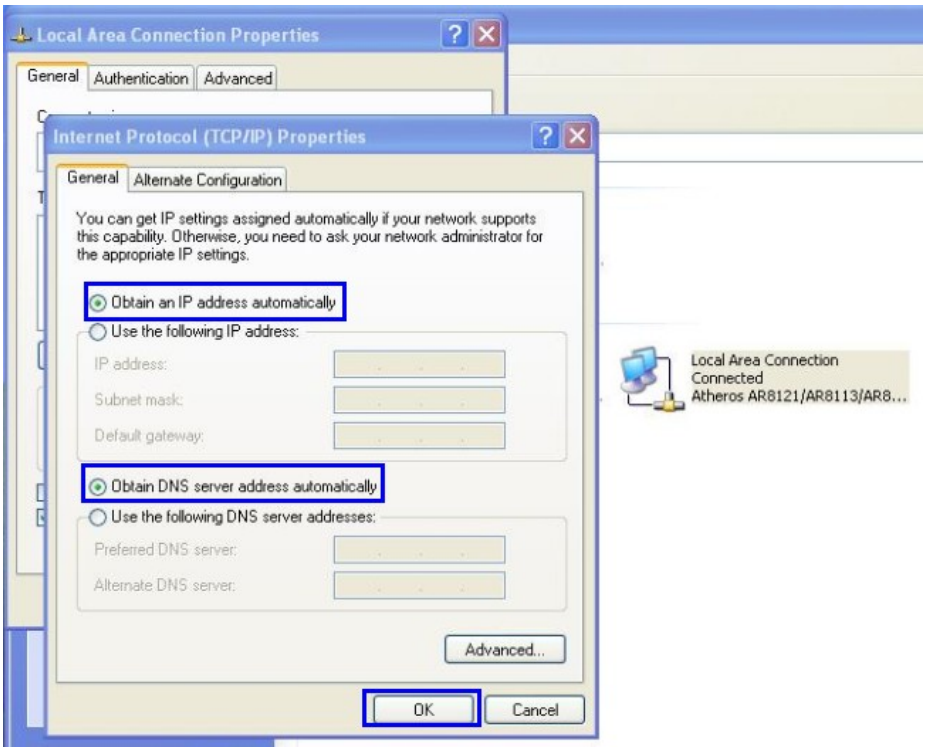
Way 1) Manual setting

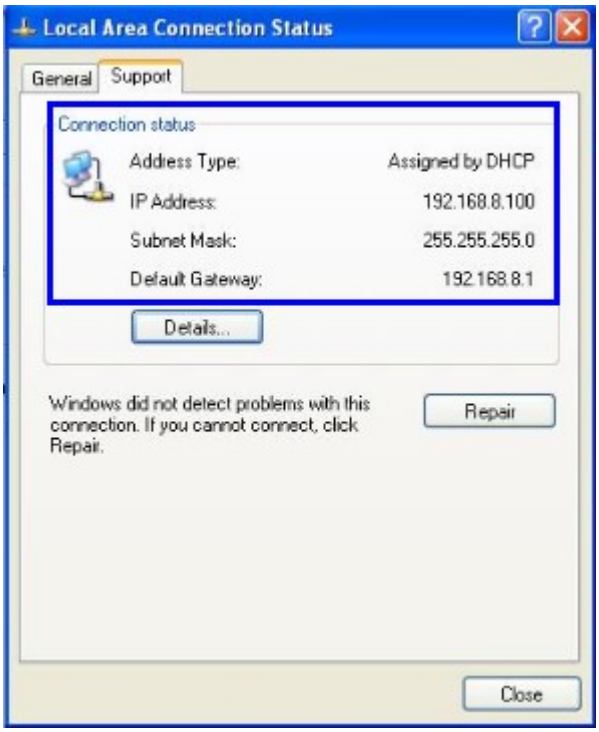
Set the PC IP as 192.168.8.xxx (xxx = 2~254), subnet mask: 255.255.255.0, default gateway: 192.168.8.1, primary DNS: 192.168.8.1.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 8 . 100
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 8 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 8 . 1
Alternate DNS server:
Advanced...
OK
Cancel
Local Area Connection
Connected
Atheros AR8121/AR8113/AR8...

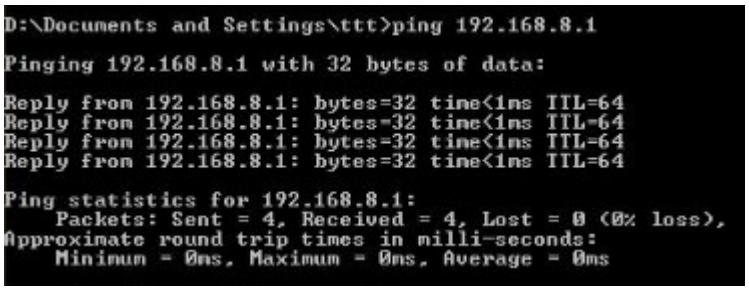
Way 2) DHCP

Choose “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



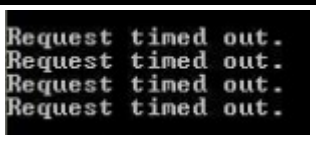


After IP setting, check it by ping. Click Windows start menu, run, execute “cmd” command. Input “ping 192.168.8.1” in the DOS window.


D:\Documents and Settings\ttt>ping 192.168.8.1
Pinging 192.168.8.1 with 32 bytes of data:
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.8.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

This information means the connection is work.

Pinging 192.168.8.1 with 32 bytes of data:
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Ping statistics for 192.168.8.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),



This information means the connection is failure. If so, please check the network cable connection and IP address setting, and can refer to *Chapter 4.9*.

3.2.2 Log into Router

- Open the Web Browser, and type http://192.168.8.1 into the address field and press

Enter bottom in your computer keyboard.

- Type User Name “admin” and Password “admin” in the pop-up Login Window, and then press the “Apply” button.

- If you type into the correct User Name and Password, you will get the access into the Router’s Web Management Page.

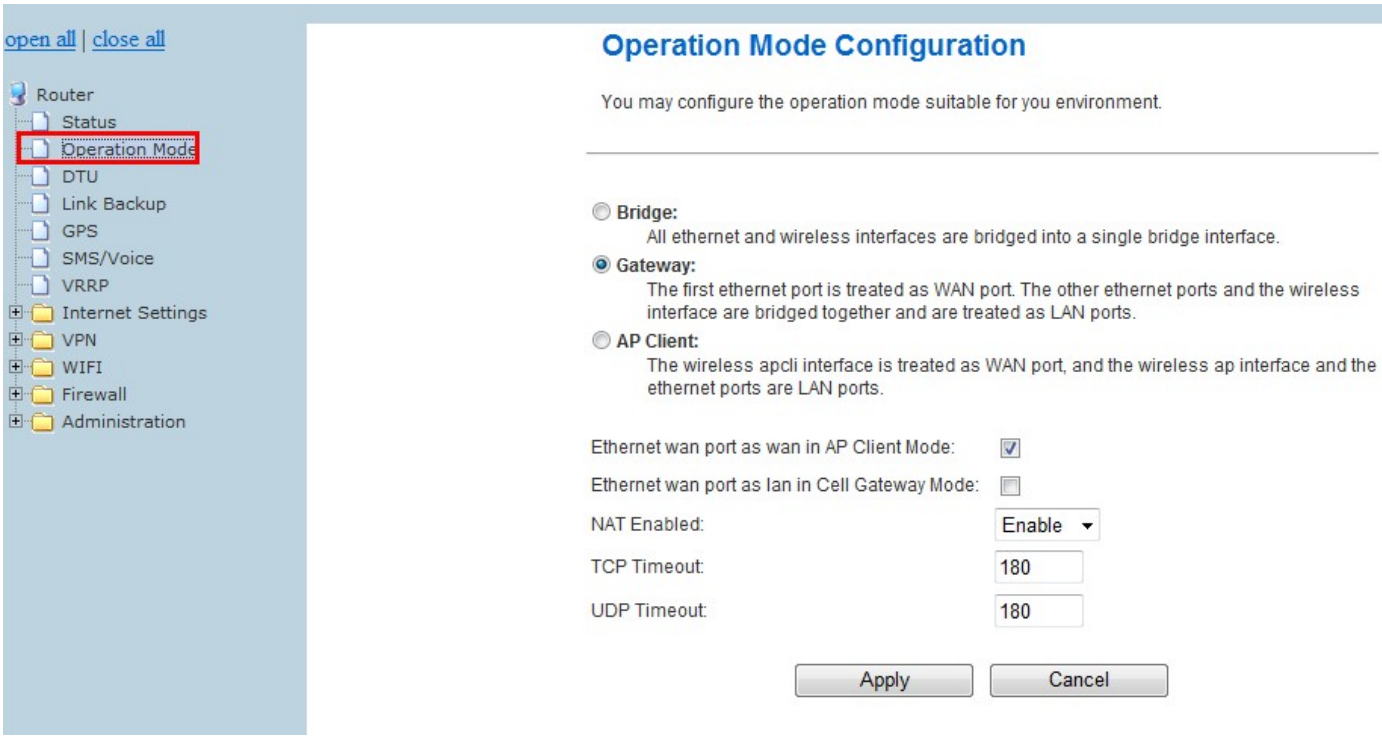
3.3 How to configure web

3.3.1 Main Menu as below Picture

Access Point Status

System Info	
Series	H700_H720
SN	086413065D4F
Software Version	2.0.0 (Jun 14 2013)
Hardware Version	1.0.0
System Up Time	3:17
Operation Mode	Gateway Mode
Cell Network Info (SIM1)	
Cell Modem	HUAWEI-EM820
IMEI/ESN	354946041138914
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2
Sub Network Type	WCDMA
Signal	24
Cell Status	UP

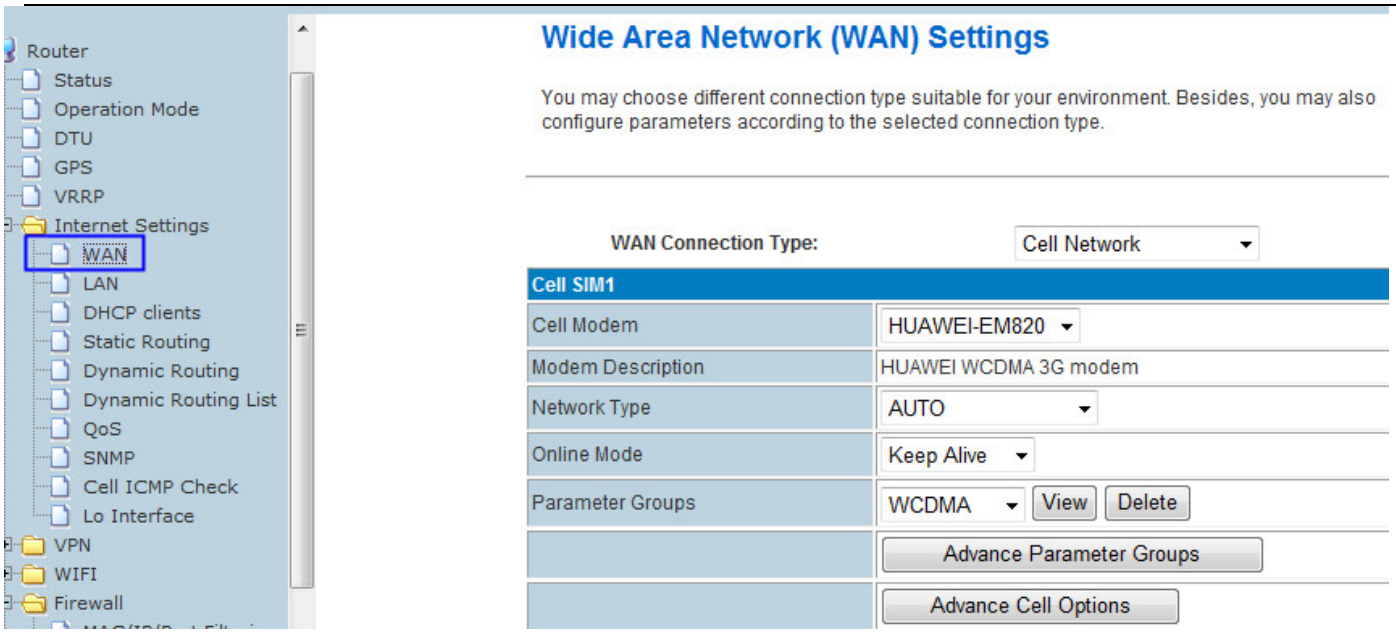
3.3.2 Operation Mode



- **Bridge**
  All Ethernet and wireless interfaces are bridged into a single bridge interface.
- **Gateway**
  The first Ethernet port is treated as WAN port. The other Ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- **AP Client**
  The wireless apcli interface is treated as WAN port and the wireless ap interface and the Ethernet ports are LAN ports.
- **NAT**
  Network Address Translation

Normally and default we select “Gateway mode”, and keep all other parameters as default.

3.3.3 WAN Settings



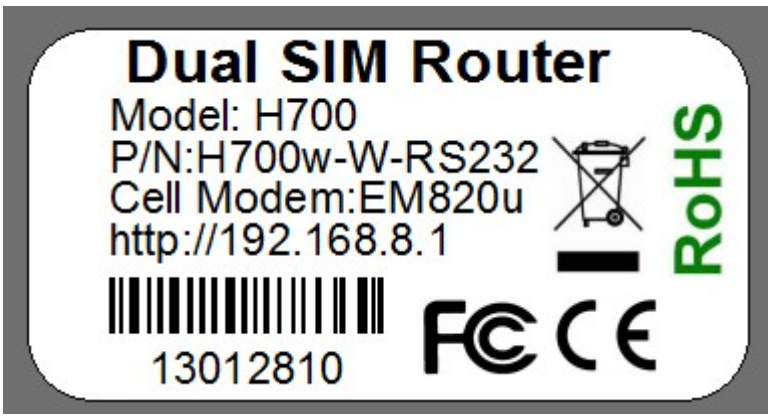
- **WAN Connection Type**
  Support Static (Fixed IP), DHCP (Auto config), PPPoE(ADSL), CELL Network.

3.3.3.1 WAN – Cell Network

Users can configure the parameters of SIM card1 and SIM card2.

- **Cell Modem**
  System supports different cell modem. Default, the router is with right Cell Modem name before shipment. If you replace with other different Cell Modem, must select *AUTO_DETECT* and click *Apply button* to reboot the router, the router will automatically check the Cell Modem name.

Notes: the Cell Modem Type was marked on the back of the router.
For example, it shows the following picture. H720 is the router series name, H720w-W-RS232 is the part number name. And the EM820w Cell Modem is the Cell Modem name.

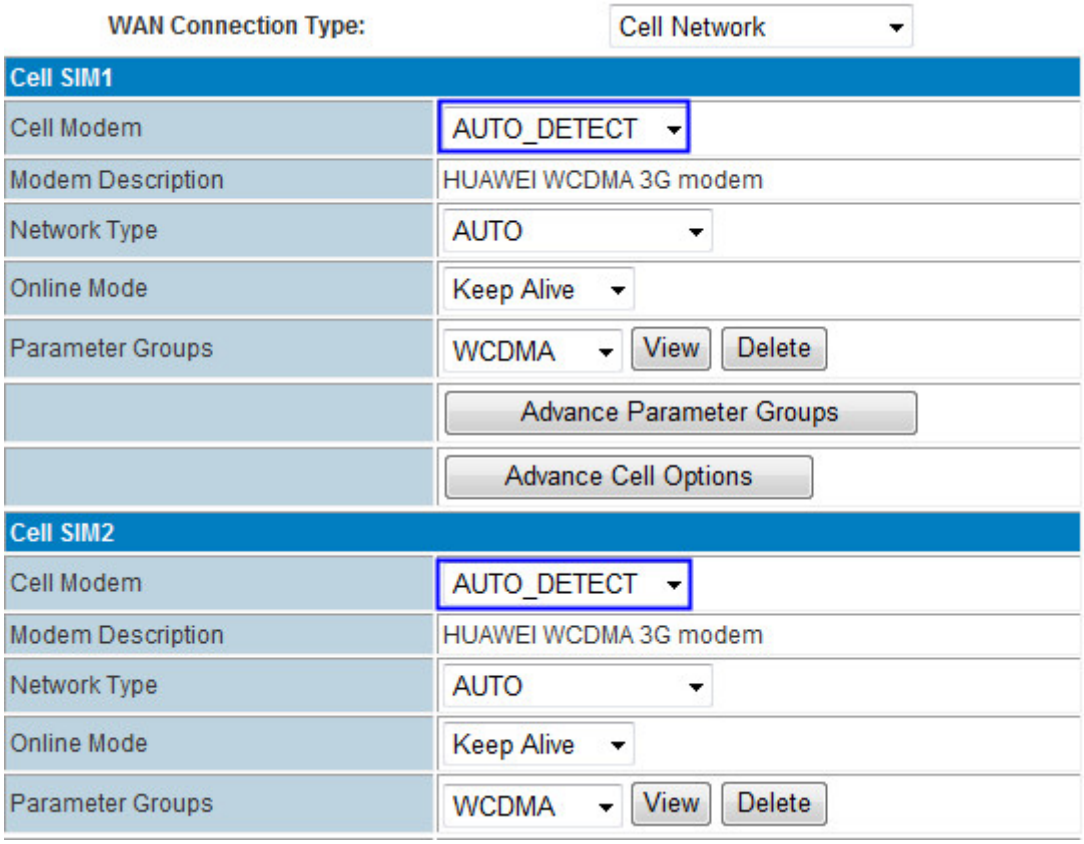


Cell Modem Detection Step >>

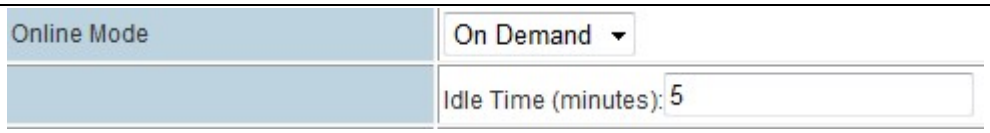
Notes:

1) If you don't replace any cellular module or not do the "Load Default to factory", please skip this step and jump to Step 5.
2) Please be patient that the router will take some more time to dialup online for first configuration,

At "Cell Modem", please select "AUTO_DETECT", and click "Apply" button. The router will automatically detect the module modem.

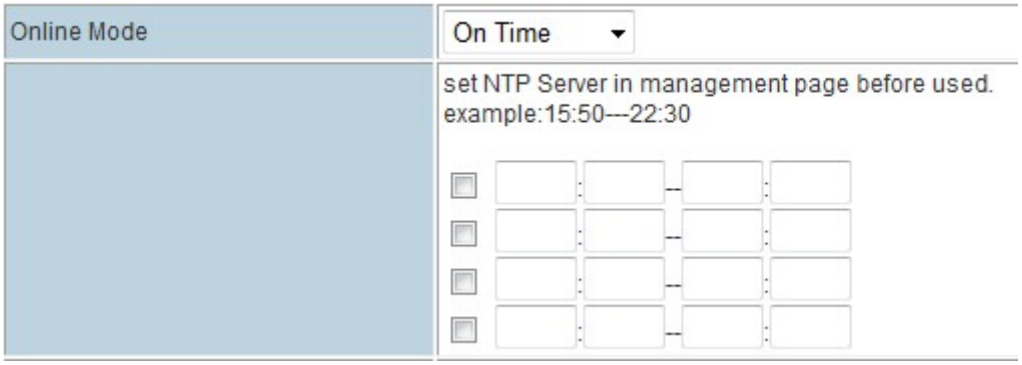


- **Modem Description**
  It will display related description after the H720 router detects the Cell Modem.
- **Network Type**
  Select the type. Different Cell Modem supports different types. Default select *AUTO*.
- **Online Mode**
  Keep Alive: means always online. The router will keep online whatever there is data for transmission or not.
  On Demand: The router will dialup when there is data for transmission.



Idle time (minutes): fill in the time. For example, fill in 5, the router will offline after 5 minutes if there is no data for transmission.

On Time: router dialup or offline with schedule. Totally supports 4 groups.



- **MAC Clone**

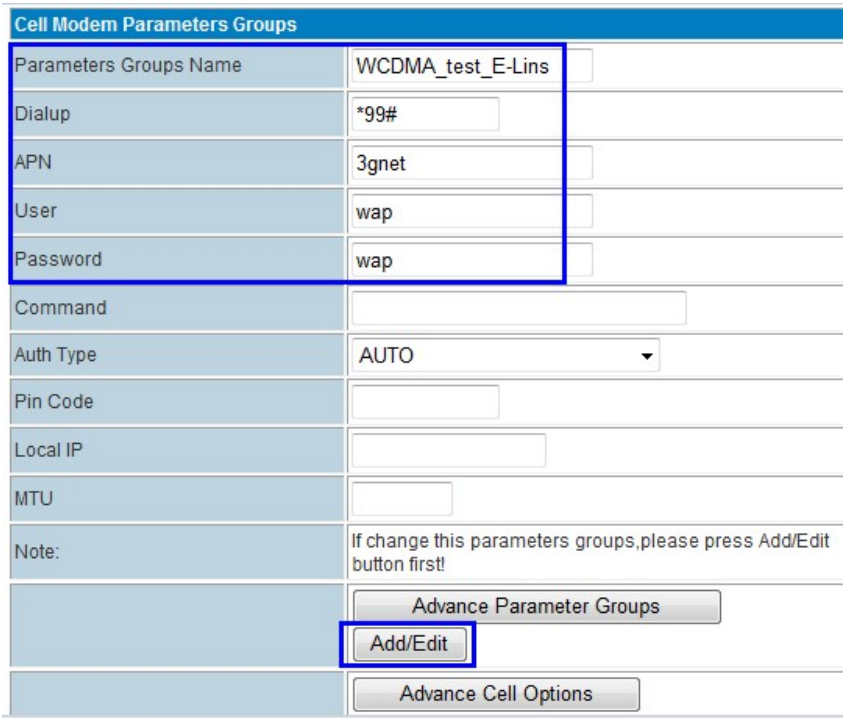
  Enable and disable the MAC clone function.

- **Parameter Groups**

APN Group Option	**Marks**
AUTO	Only keep for future use. Normally do not select this
WCDMA	If your router is 4G LTE or WCDMA HSPA/HSDPA/HSUPA/HSPA+/EDGE/GPRS/GSM version, please select this one
CDMA	If your router is CDMA2000 EVDO or CDMA1x version, please select this one
TD-SCDMA	If your router is TD-SCDMA HSDPA/HSUPA version, please select this one
User-defined (only show after user defined one)	If you add one APN group with your defined parameters, please select this one

- **Advance Parameter Groups**

  Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. Define one APN Group to fit your network and sim card.



Fill in the related parameters. And DO NOT FORGET TO CLICK “Add/Edit” button.

Parameters Groups Name: you can fill in the name freely. But keep No Space between characters.

Dialup: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

APN: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

User: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier.
Notes: If your SIM card has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

Password: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier.
Notes: If your SIM card has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

Command: this is for command to control the module or router. Normally is for debug use.
Auth Type: Three options (AUTO, PAP, CHAP/MS-CHAP/MS-CHAP2). Please confirm your carrier provide the types of authentication. Normally select *AUTO*. If not work, try to use *PAP* or *CHAP*.
PIN code: if necessary. Most of sim card has no PIN code, and then keep it as blank.

Notes: Please press Add/Edit button to add your defined APN parameters. At *Parameter Groups*, it will automatically choose the defined *APN Parameter Groups*.

- **Advance Cell Options**

  Notes: If you don't know advance cell parameters very well, please keep default settings. Otherwise the router may not work.

  Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. 2nd click to contract.

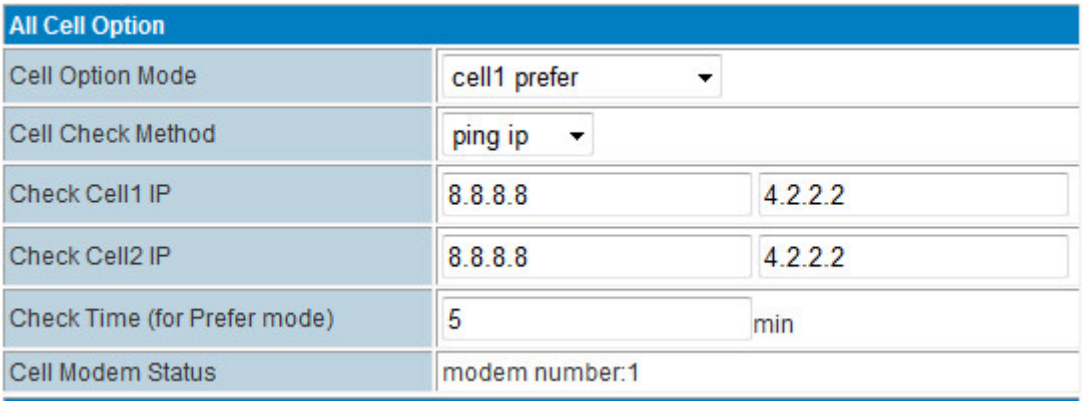
Cell Options Advances Settings	
LCP	Disable Enable interval(sec): 10
PAP	Disable Auto
CHAP	Disable Auto
MS-CHAP	Disable Auto
MS-CHAP-V2	Disable Auto
Compression Control Protocal	Disable Require
Address/Control Compression	Disable Require
Protocal Field Compression	Disable Require
VJ TCP/IP Header Compression	Disable Require
Connection-ID Compression	Disable Require
BSD-Compress compression	Disable Require
Deflate compression	Disable Require
MPPE Encryption	Disable Enable
MPPE 40bit	Disable Enable
Refuse Stateless Encryption	Disable Enable
More Options ('~' for separate)	

  LCP: ppp dialup monitor. At *interval(sec)*, fill in the time for every check. For example, if fill in 10, the router will get LCP check every 10 seconds.
  Other parameters: user can disable or enable or define it.

Notes:

1. Do not forget to click *Apply* button after setting.
2. Sometimes the router cannot dialup after the APN configuration, please power off the router, and re-power on it. Because some radio modules need reboot after the initial APN configuration.
3. Cell SIM1 parameter group is for SIM Card 1, and Cell SIM2 parameter group is for SIM Card 2.

All Cell Option (Switching Trigger Mode)



There are 6 types of Cell Switching Mode,

Mode	Description
cell1 only	With this mode, only sim1 works
cell2 only	With this mode, only sim2 works
fail switch cell1 first	With this mode, it works like this, sim1 on – switch to sim2 on if sim1 failed, and keep working on sim2 – switch to sim1 on if sim2 failed, and keep working on sim1 –switch to sim2 on if sim1 failed, and keep working on sim2 – “cycling”
fail switch cell2 first	With this mode, it works like this, sim2 on – switch to sim1 on if sim2 failed, and keep working on sim1 – switch to sim2 on if sim1 failed, and keep working on sim2 –switch to sim1 on if sim2 failed, and keep working on sim1 – “cycling”
cell1 prefer	With this mode, it works like this, sim1 on – keep working on sim1 – if sim1 failed, switch to sim2 – keep working on sim2 for “Check Time (for Prefer mode)”, then try to check if sim1 is restored, if restored, switch to sim1 – “cycling”
cell2 prefer	With this mode, it works like this, sim2 on – keep working on sim2 – if sim1 failed, switch to sim1 – keep working on sim1 for “Check Time (for Prefer mode)”, then try to check if sim2 is restored, if restored,

	switch to sim2 – “cycling”

Notes: Sometimes it may happen the following,
1) Choosing “fail switch cell1 first” or “cell1 prefer”, SIM2 is firstly online, this is not problem because sometimes the SIM1 has some problem to be online.

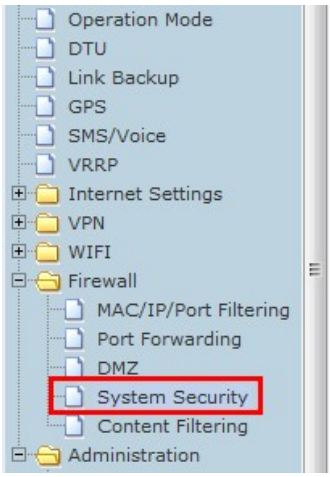
2) Choosing “fail switch cell2 first” or “cell2 prefer”, SIM1 is firstly online, this is not problem because sometimes the SIM2 has some problem to be online.

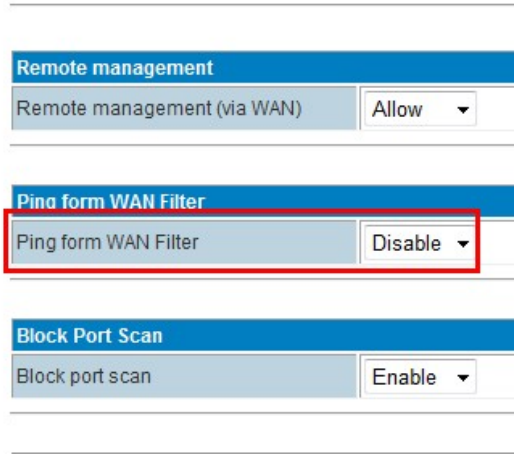
Check Time (for Prefer mode): set the time for “cell1 prefer mode” or “cell2 prefer mode”

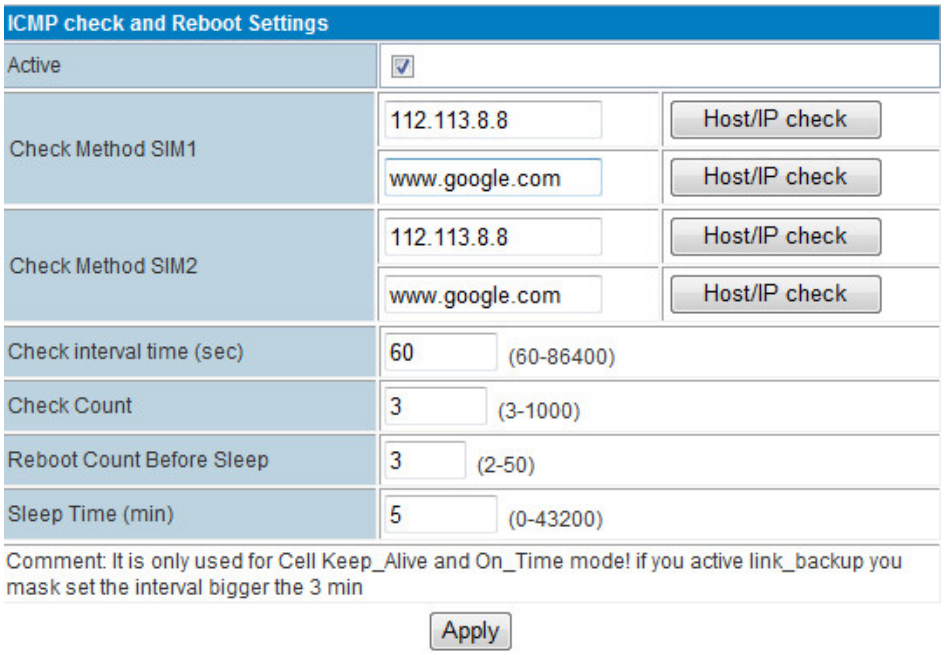
3.3.3.2 Cell ICMP Check

Setting location: H720 web: Internet Settings – Cell ICMP Check

Notes:
1) For router working with best stability, we highly suggest activate and use this feature.
With this feature, the Router will automatically detect its working status and fix the problem.
2) Please disable the “Ping from WAN Filter” if use ICMP check feature, otherwise it cannot work.





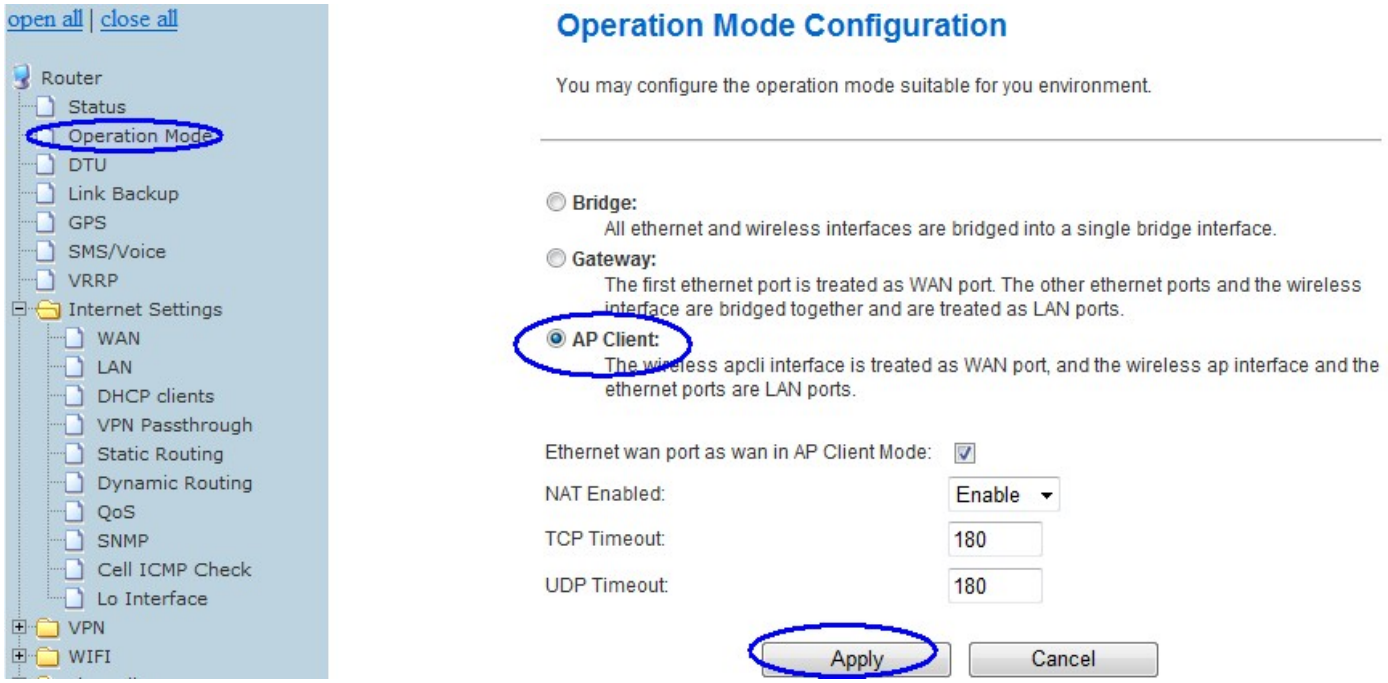


- **Active:** tick it to enable ICMP check feature
- **Check method SIM1:** It's for SIM card1. Fill in checking domain name or IP. Click *HOST/IP check* button to verify before using it.
- **Check method SIM2:** It's for SIM card2. Fill in checking domain name or IP. Click *HOST/IP check* button to verify before using it.
- **Check interval time (sec):** set the interval time of every check
- **Check Count:** set the checking count number
- **Reboot Count Before Sleep:** H720 Router will sleep to stop checking after failed with set times.
- **Sleep Time (min):** H720 Router sleep timing before resume check.

Example with above picture:
H720 Router check "www.google.com" and "112.134.8.8", it will check 3 times. After the previous check, it will do next check after 60 seconds. Totally it will check 3 times. If 3 times all failed, H720 Router will reboot. If reboots 3 times continuously, H720 Router goes to sleep to stop checking. The sleep time is 5 minutes. After 5 minutes, H720 Router resume to cycle the checking.

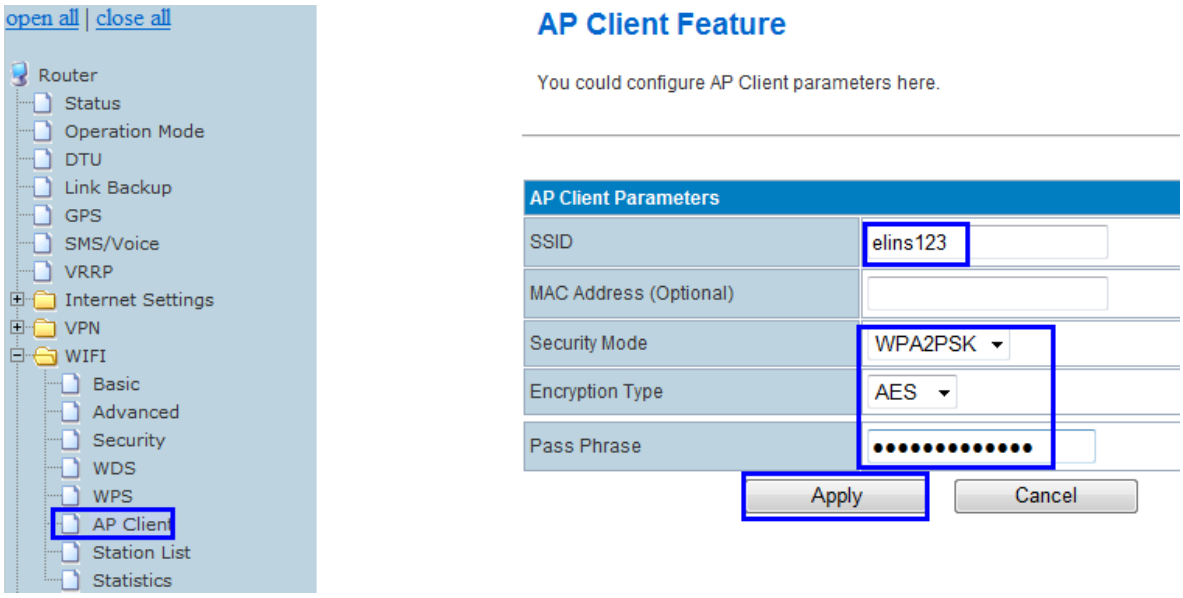
3.3.3.3 AP Client mode (WiFi Client)

Set H720 as an AP client, H720 will connect the upper WiFi router or WiFi AP.
Step1)
H720 web -- Operation Mode – Choose "AP Client", and click apply button. Wait some time until the H720 make the setting works.



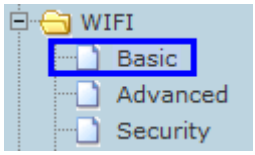
The router will switch to AP Client mode.

Step2)
WIFI – AP Client
Here fill in the parameters.
SSID: input the WiFi router's SSID
Security Mode: choose correct one to match the WiFi router/AP you want to connect.
Encryption Type: choose correct one to match the WiFi router/AP you want to connect.

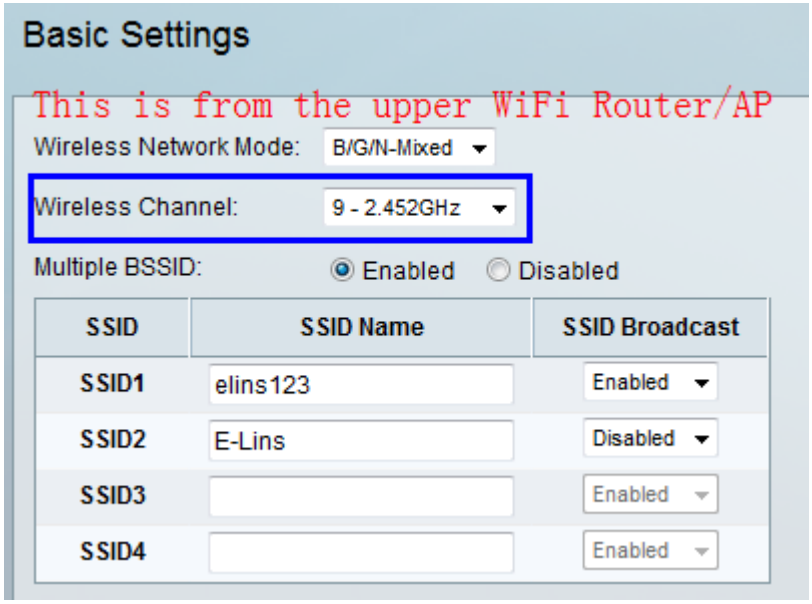


Step3)

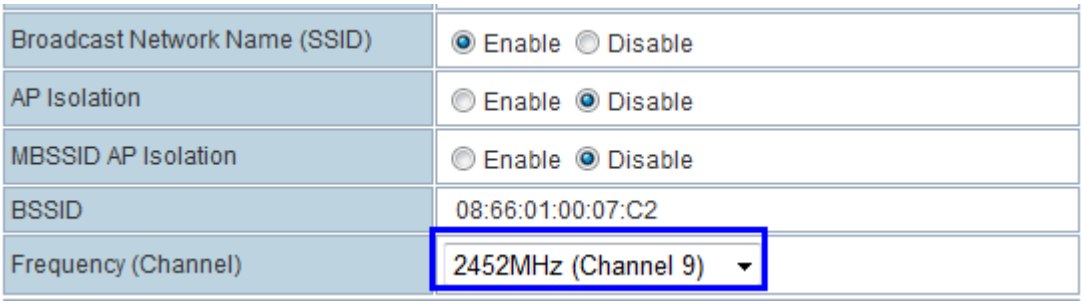
WIFI -- Basic



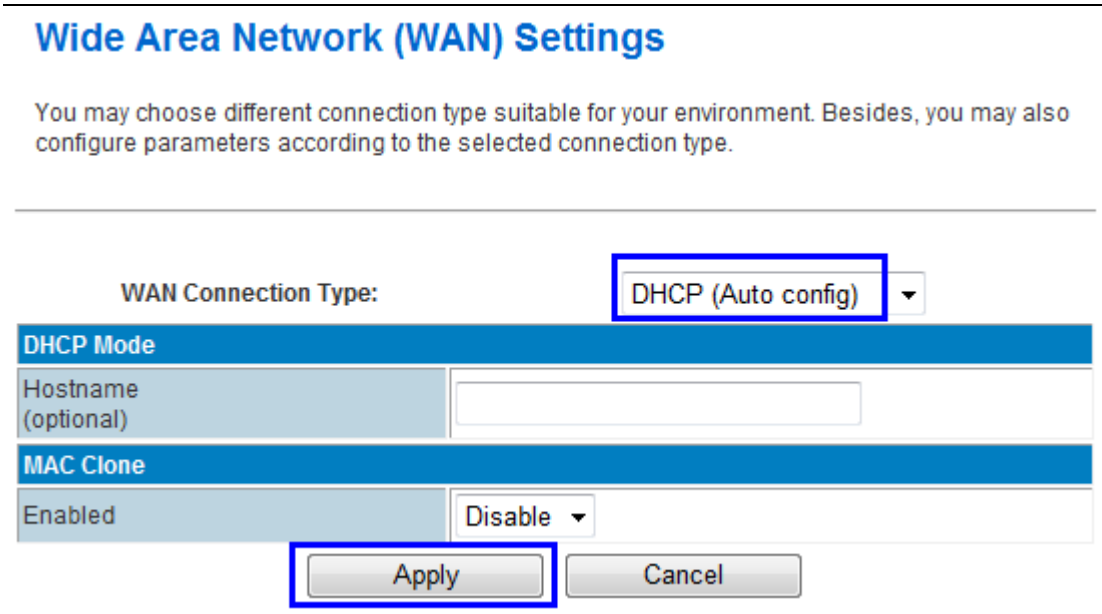
Here please select the right channel the same with the upper WiFi Router/AP you want to connect.



Then choose the same Channel in H720 router as follows,


Broadcast Network Name (SSID) Enable Disable
AP Isolation Enable Disable
MBSSID AP Isolation Enable Disable
BSSID 08:66:01:00:07:C2
Frequency (Channel) 2452MHz (Channel 9)

Step4)
Internet Settings – WAN



At “WAN Connection Type”, choose “DHCP (Auto Config)”, and click “Apply” button. The H720 router will automatically connect the WiFi Router and get local IP from the wifi router. You can check at status info page.

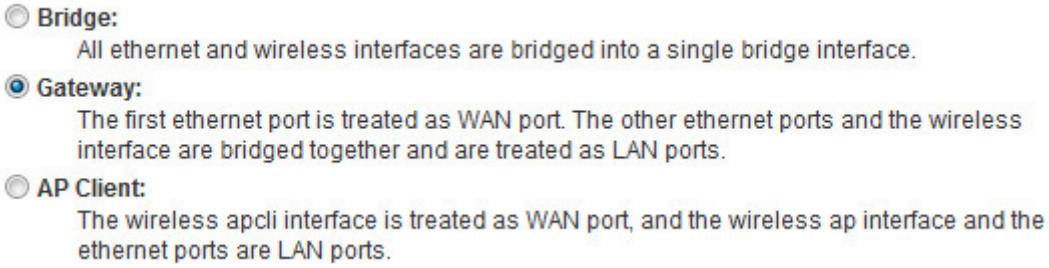
3.3.3.4 WAN – PPPoE (xDSL)

Set H720 WAN via PPPoE, H720 will connect the upper PPPoE modem.

Step 1)
Connect RJ45 cable between PPPoE modem to H720 WAN RJ45 port. Once it’s connected, the H720 Web *Ethernet Port Status* will display.

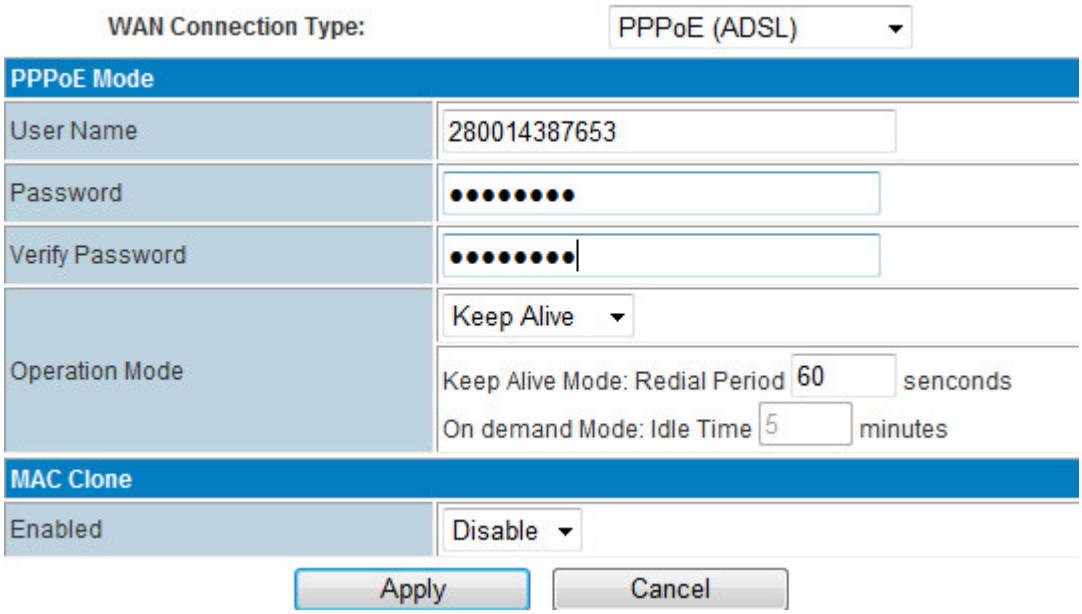
Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

Step 2)
H720 web – Operation Mode, choose “Gateway” mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)

H720 web – Internet Settings – WAN – WAN Connection Type, choose “PPPoE (ADSL)”



- **WAN Connection Type:** choose “PPPoE (ADSL)”
- **User Name:** fill in the PPPoE username
- **Password:** fill in the PPPoE password
- **Operation Mode:**

  Keep Alive: PPPoE will keep online whatever if there is data transmission.
  Fill in the Redial Period time.

  On Demand: PPPoE dialup with data transmission demand.
  Set the Idle Time. PPPoE will be offline if the set idle time has no data transmission.

  Manual: need manually dialup.

Click “Apply” button.

Step 4)

H720 web – Status, it display the WAN IP once the PPPoE is online.

Internet Configurations	
Connected Type	PPPOE
WAN IP Address	119.59.141.4
Subnet Mask	255.255.255.255
Default Gateway	119.59.141.1
Primary Domain Name Server	211.162.78.1
Secondary Domain Name Server	211.162.78.3
MAC Address	08:66:01:00:04:A0

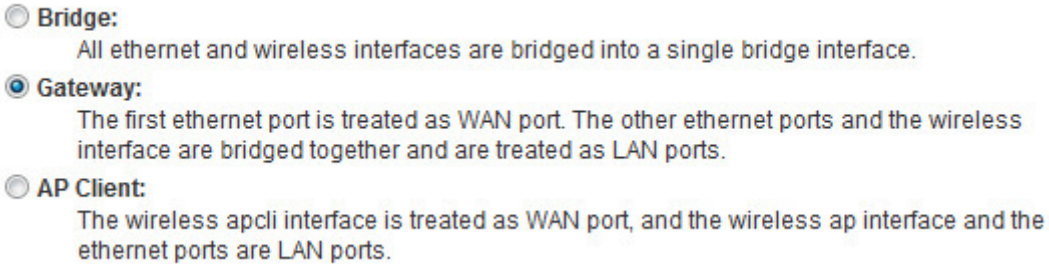
3.3.3.5 WAN – STATIC (fixed IP)

Set H720 WAN via STATIC fixed IP, H720 will connect the upper router via STATIC fixed IP.

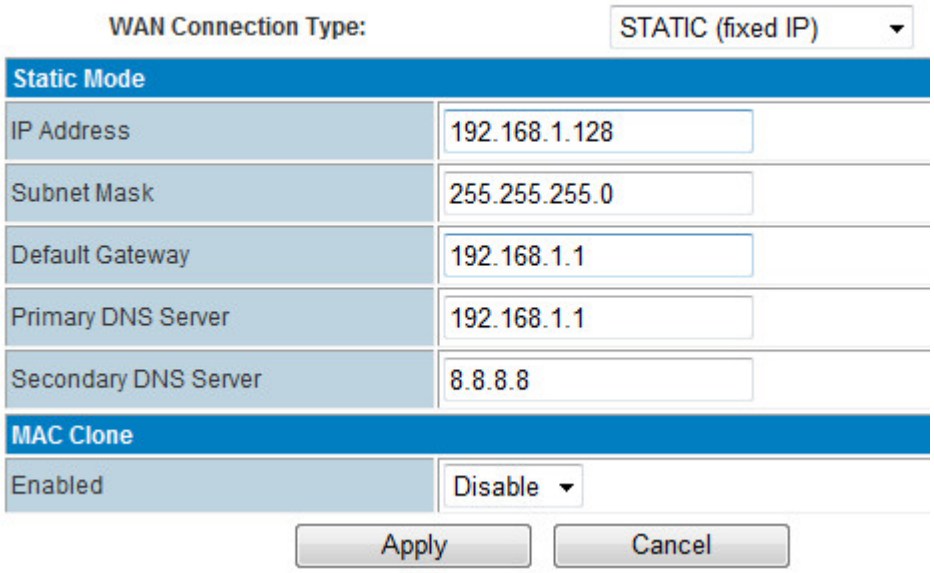
Step 1)
Connect RJ45 cable between Upper Router LAN RJ45 to H720 WAN RJ45 port. Once it's connected, the H720 Web *Ethernet Port Status* will display.

Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

Step 2)
H720 web – Operation Mode, choose "Gateway" mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)
H720 web – Internet Settings – WAN – WAN Connection Type, choose "STATIC (fixed IP)"



- **WAN Connection Type:** choose “STATIC (fixed IP)”
- **IP Address:** fill in one IP Address. This IP Address should be same range of the Upper Router.

For example, the Upper Router LAN IP is 192.168.1.1 and Subnet Mask is 255.255.255.0, you can fill in the parameters as above.

- **Subnet Mask**: fill in the Subnet Mask from the Upper Router.
- **Default Gateway**: fill in the Upper Router’s Gateway IP.
- **Primary DNS Server**: If your Upper Router supports DNS proxy, fill in the Upper Router’s LAN IP as Primary DNS Server. Or you can fill in the correct DNS Server IP.
- **Secondary DNS Server**: Fill in a working secondary DNS Server IP.

Click “Apply” button.

Step 4)

H720 web – Status, it display the WAN IP once the STATIC (fixed IP) is online.

Internet Configurations	
Connected Type	STATIC
WAN IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	8.8.8.8
MAC Address	08:66:01:00:04:A0

3.3.3.6 WAN – DHCP (Auto config)

Set H720 WAN via DHCP (Auto config), H720 will connect the upper router via DHCP.

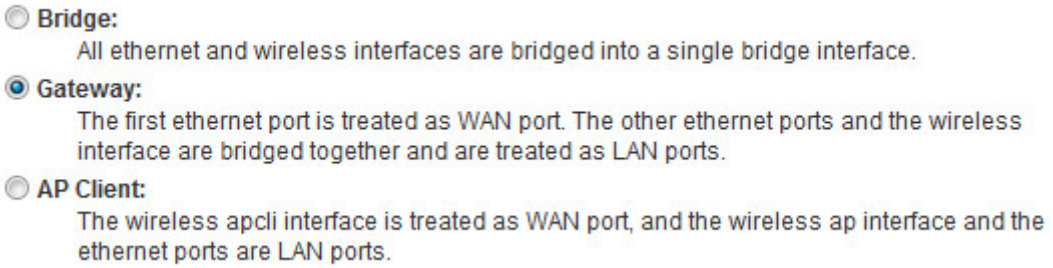
Step 1)

Connect RJ45 cable between Upper Router LAN RJ45 to H720 WAN RJ45 port. Once it's connected, the H720 Web *Ethernet Port Status* will display.

Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

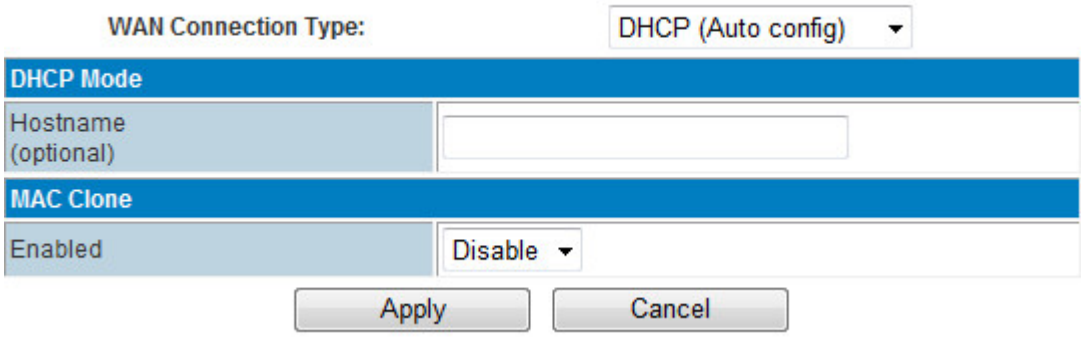
Step 2)

H720 web – Operation Mode, choose "Gateway" mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)

H720 web – Internet Settings – WAN – WAN Connection Type, choose "DHCP (Auto config)"



- **WAN Connection Type:** choose "DHCP (Auto config)"

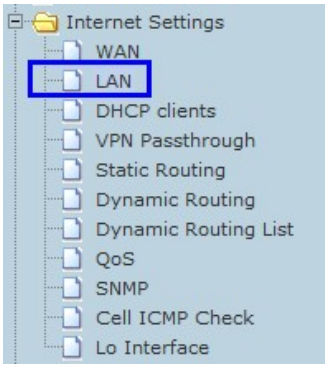
Click "Apply" button.

Step 4)

H720 web – Status, it display the WAN IP once the DHCP (Auto config) is online.

Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.1.103
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	192.168.1.1
MAC Address	08:66:01:00:04:A0

3.3.4 LAN Settings



LAN Setup	
IP Address	192.168.8.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.8.100
End IP Address	192.168.8.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.8.1
Lease Time	86400

Setting the LAN parameters, include IP address, sub mask, VLAN, DHCP, etc.

Notes: if you change the Router gateway IP address, do not forget to change the Default Gateway manually same as IP address.

3.3.4.1 Router Gateway IP

Default, the Router LAN IP is 192.168.8.1. If users want to modify it, please change the related parameters.

LAN Setup	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.1.100
End IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.1.1
Lease Time	86400

IP Address: change the value you need
Start IP Address: for DHCP start IP
End IP Address: for DHCP end IP
Default Gateway: manually change it after you modify the *IP Address*.

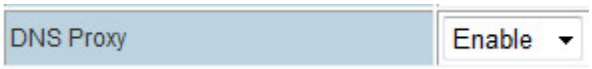
3.3.4.2 MAC binding

H720 Router supports 3 groups of MAC Binding. The parameter value format is as followed picture.

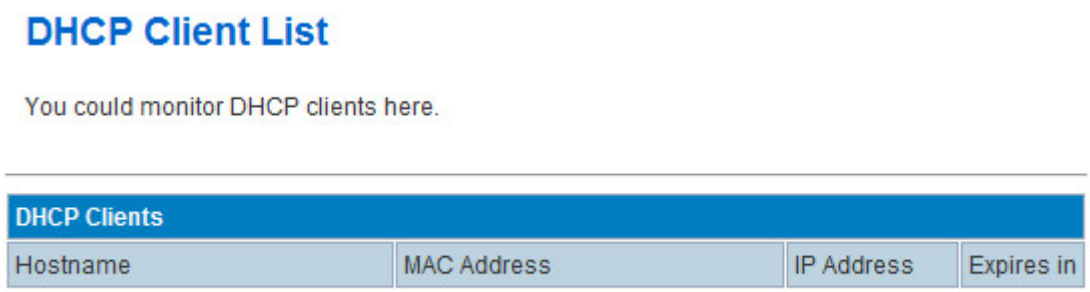
Statically Assigned	MAC: 00:21:86:61:7A:88 IP: 192.168.8.2
Statically Assigned	MAC: IP:
Statically Assigned	MAC: IP:

3.3.4.3 DNS Proxy

H720 Router default enables the DNS Proxy. With this, the H720 router can get DNS automatically and assigned to the PC/Device. If disable the DNS Proxy, please input correct DNS for your PC/Device, otherwise, it may not work correctly.



3.3.5 DHCP Client



List the Clients which gain IP address from DHCP.

3.3.6 Configure Static Routing

This section mainly introduces what is Routing Table and how to configure static router.

- Routing Table

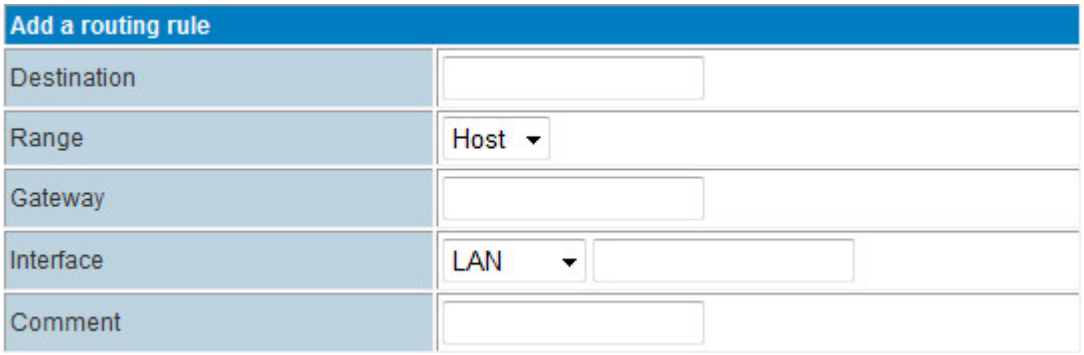
  This page shows the key routing table of this router.

Current Routing table in the system:

No.	Destination	Netmask	Gateway	Flags	Metric	Ref	Use	Interface	Comment
1	10.64.64.64	255.255.255.255	0.0.0.0	5	0	0	0	WAN (ppp0)	
2	255.255.255.255	255.255.255.255	0.0.0.0	5	0	0	0	LAN (br0)	
3	192.168.8.0	255.255.255.0	0.0.0.0	1	0	0	0	LAN (br0)	
4	0.0.0.0	0.0.0.0	10.64.64.64	3	0	0	0	WAN (ppp0)	

- New Static Router

  This page is about how to set static routing function of the router.



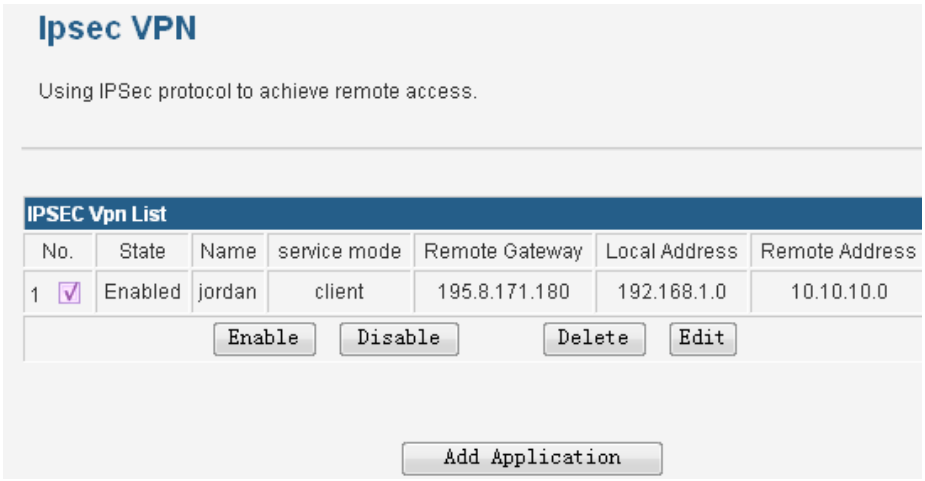
Destination: please enter Target Host or IP network segment
Range: Host or Network can be chosen
Gateway: IP address of the next router.
Interface: You can choose the corresponding interface type.
Comment: some notes
Notice:

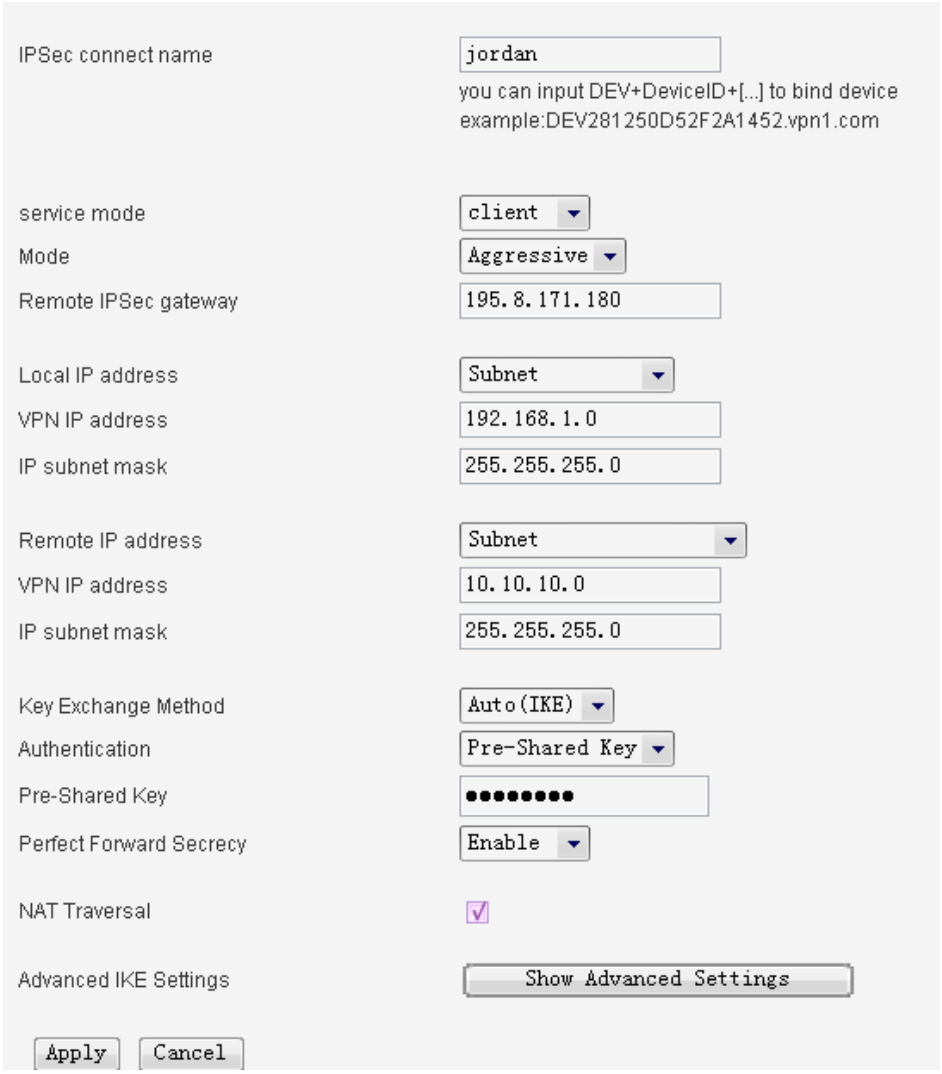
- Gateway and LAN IP of this router must belong to the same network segment.
- If the destination IP address is the one of a host, and then the Subnet Mask must be 255.255.255.255.
- If the destination IP address is IP network segment, it must match with the Subnet Mask. For example, if the destination IP is 10.0.0.0, and the Subnet Mask is 255.0.0.0.

3.3.7 VPN

Notes: the following VPN configuration manual may be out of date. We update the IPSec and PPTP configuration in another manual. Please refer to manual of "H685_H720_VPN_Usermanual_Eng.pdf"

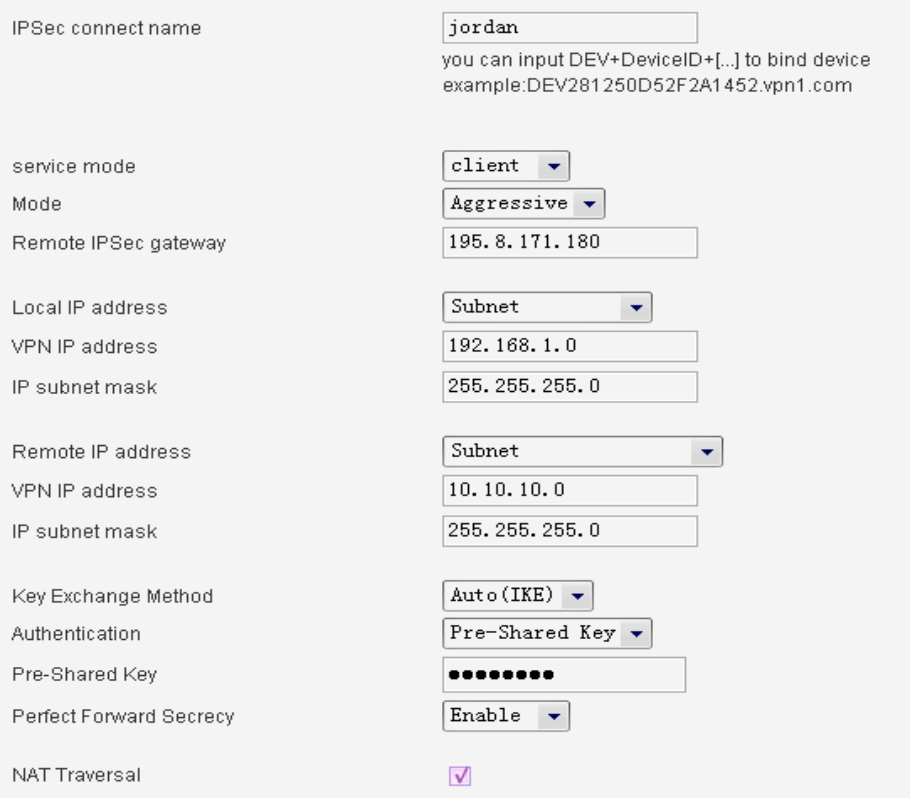
3.3.7.1 IPSEC

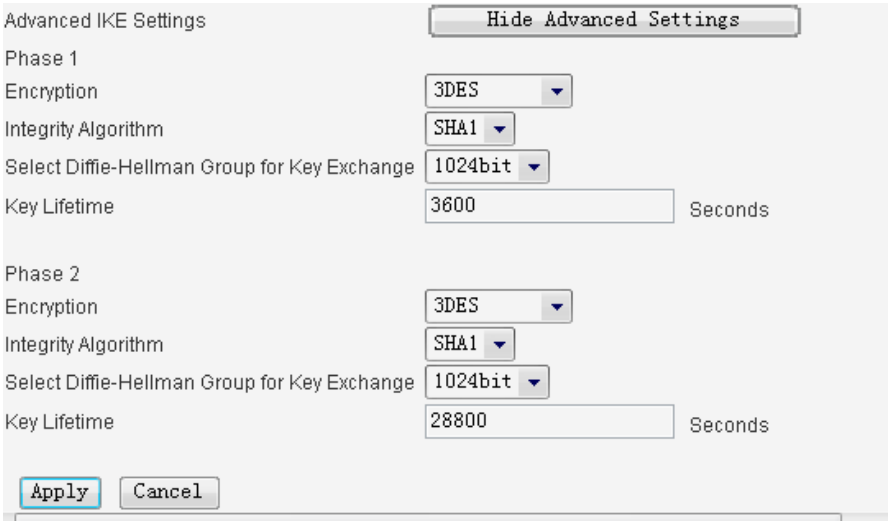

Ipsec VPN
Using IPSec protocol to achieve remote access.
IPSEC Vpn List
No. State Name service mode Remote Gateway Local Address Remote Address
1 Enabled jordan client 195.8.171.180 192.168.1.0 10.10.10.0
Enable Disable Delete Edit
Add Application



- **IPsec connect name**: make sure the name in client and server are same, we suggest to use domain name (111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name (DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H720's ID in the Status interface.
- **Service Mode**: Server/Client

- **Mode**: Main/Aggressive. The Aggressive mode is commonly used.
- **Remote Gateway**: This choice just appears in the Client mode and it is used to fill the IP address in the Server.
- **Local IP address**: Fill LAN IP of this device. You can fill an IP or a network segment.
- **Remote IP address**: Fill the IP of the other router.
- **Authentication**: Commonly, Pre-Shared Key is chosen. And the Client and Server must choose the same key.
- **Advanced AKE settings:** There are some encryption methods in this field. You must use the settings in this field when VPN tunnel needs to be built between H720 and other brand VPN server.
- **Example: Connected cisco 7200 and H720**
  How to config H720 as VPN clinet
  IPsec Name: make sure the name in client and server are same, we suggest to use domain name(111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H720's ID in the Status interface.



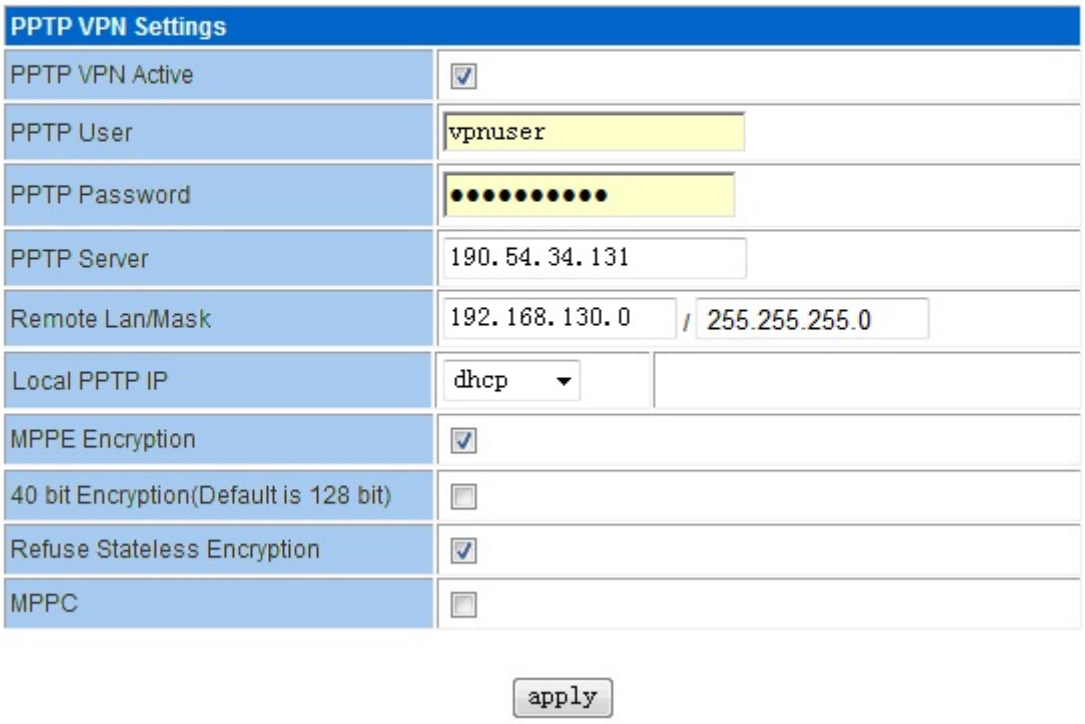


How to config CISCO 7200 as VPN Server

```
crypto keyring jordan
 pre-shared-key hostname jordan key test

 crypto isakmp profile jordan
  description china SZ shenzhen
  keyring jordan
  match identity host jordan
  keepalive 60 retry 10

 crypto ipsec transform-set vpnset esp-des esp-sha-hmac

 crypto ipsec profile jordan
set transform-set vpnset
set isakmp-profile jordan

 crypto dynamic-map jordan 1
  set security-association lifetime kilobytes 536870912
  set security-association lifetime seconds 43200
  set transform-set vpnset
  set isakmp-profile jordan
  reverse-route
   crypto map COREVPN 26 ipsec-isakmp dynamic jordan
```

3.3.7.2 PPTP

PPTP



PPTP feature works as Client only.

- **PPTP VPN Active**: tick it to enable VPN feature.
- **PPTP User**: fill in the right username, which is from the PPTP Server.
- **PPTP Password:** fill in the right password, which is from the PPTP Server.
- **PPTP Server**: fill in the PPTP Server is IP address or domain name.
- **Remote Lan/Mask**: fill in the PPTP Server's LAN range and submask.
- **Local PPTP IP**: default chooses "dhcp". If choose "static", please fill in a local PPTP assigned IP, which depends on PPTP Server's settings.
- **MPPE Encryption:** tick it or not depends on PPTP Server's settings.
- **40 bit Encryption(Default is 128 bit)**: tick it or not depends on PPTP Server's settings.
- **Refuse Stateless Encryption**: tick it or not depends on PPTP Server's settings.
- **MPPC**: tick it or not depends on PPTP Server's settings.

Click "apply" button to activate the settings. The PPTP client will try to connect the PPTP Server automatically. See example of *Chapter 5.8*.

Notes:
1) If the PPTP cannot through between client and server, please check if the MPPE configuration is matched with PPTP server or not.
2) Normally PPTP server has route for 192.168.1.1/24 or 192.168.0.1/24. Please check the PPTP

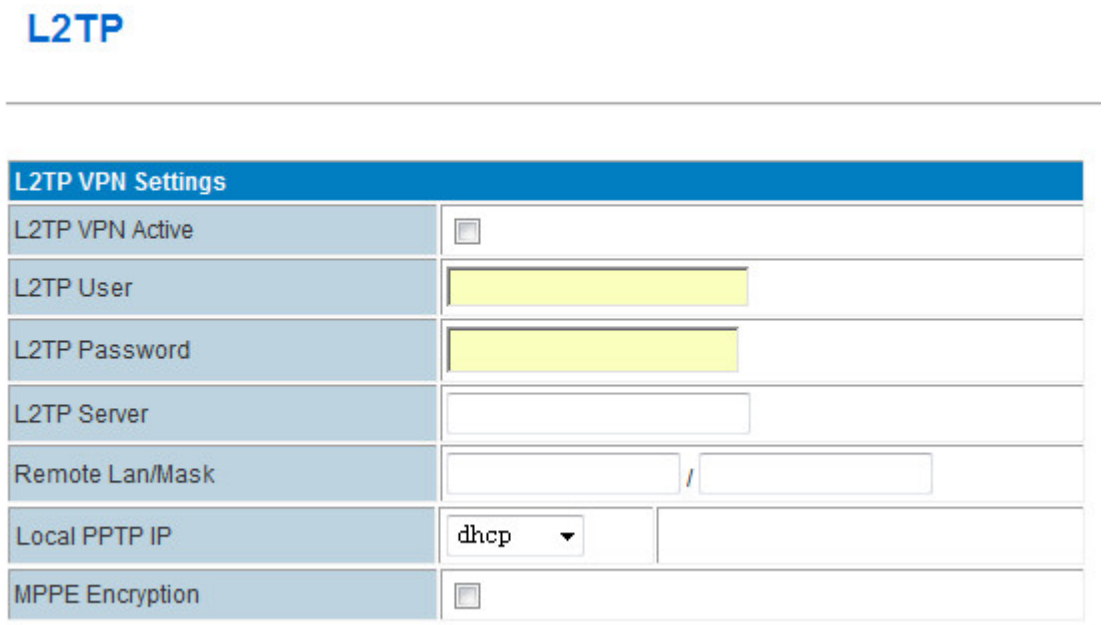
server has the route of 192.168.8.0/24 if your H820 router is with IP 192.168.8.1.
For example, if H820 LAN IP is 192.168.8.1 and assigned PPTP IP is 172.1.1.2. Then at the PPTP server, need add a route for 192.168.8.0/24 and gateway as 172.168.1.2. Meanwhile, we suggest PPTP Server use fixed PPTP IP rule for PPTP client, otherwise need modify the route's gateway every time because the PPTP client gets a random PPTP IP.

Typical Application (1) E-Lins Router as PPTP Client --- Connects --- E-Lins Router as PPTP Server:
Once PPTP setup, the two E-Lins router will add the route themselves automatically.

Typical Application (2) E-Lins Router as PPTP Client --- Connects --- Other Router/Windows as PPTP Server:
Once PPTP setup, the E-Lins router will add the route itself automatically. But the PPTP Server will not add the route automatically. So need manually add it.

Typical Application (3) Mobile Phone/Portable Devices as PPTP Client --- Connects --- E-Lins Router/Windows/Other Router as PPTP Server:
No need add the route.

3.3.7.3 L2TP



L2TP feature works as Client only.

Notes:
Normally L2TP server has route for 192.168.1.1/24 or 192.168.0.1/24. Please check the L2TP

server has the route of 192.168.8.0/24 if your H820 router is with IP 192.168.8.1.

For example, if H820 LAN IP is 192.168.8.1 and assigned L2TP IP is 172.1.1.2. Then at the L2TP server, need add a route for 192.168.8.0/24 and gateway as 172.168.1.2. Meanwhile, we suggest L2TP Server use fixed L2TP IP rule for L2TP client, otherwise need modify the route's gateway every time because the L2TP client gets a random L2TP IP.

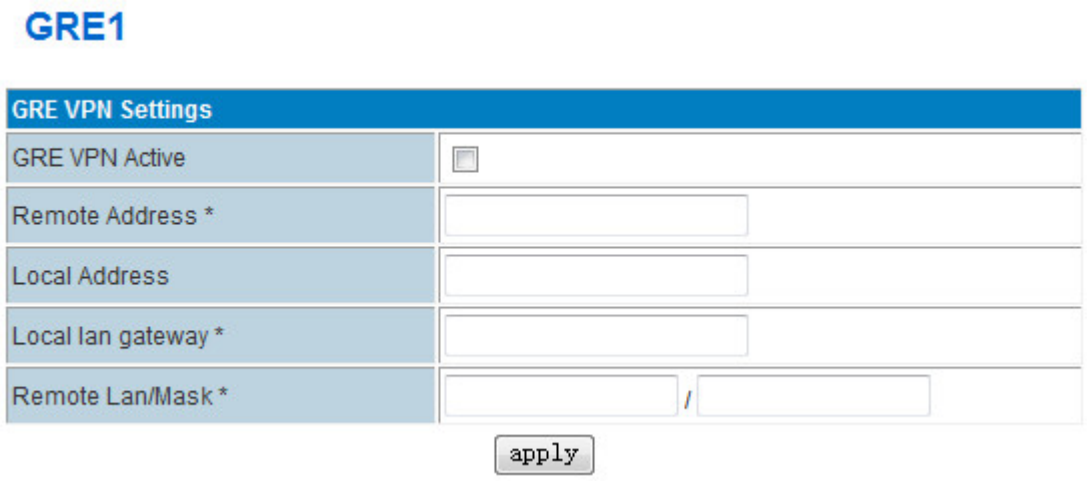
Typical Application (1) E-Lins Router as L2TP Client --- Connects --- E-Lins Router as L2TP Server:
Once L2TP setup, the two E-Lins router will add the route themselves automatically.

Typical Application (2) E-Lins Router as L2TP Client --- Connects --- Other Router/Windows as L2TP Server:
Once L2TP setup, the E-Lins router will add the route itself automatically. But the L2TP Server will not add the route automatically. So need manually add it.

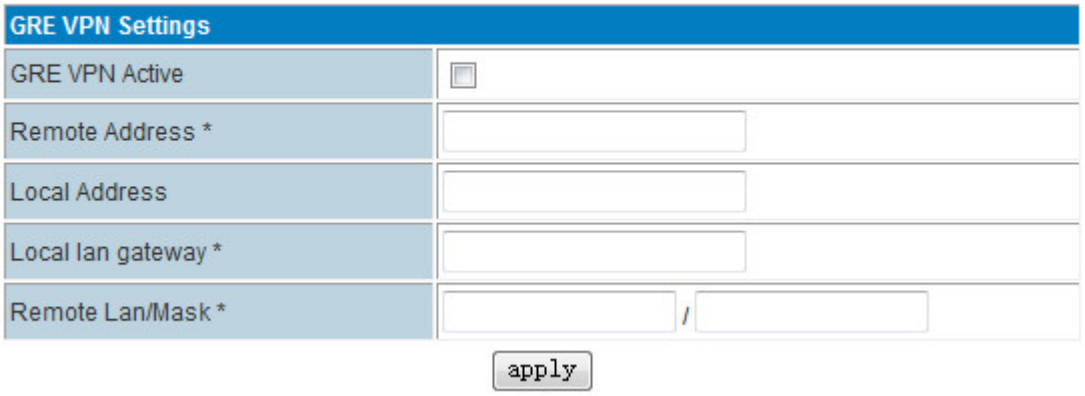
Typical Application (3) Mobile Phone/Portable Devices as L2TP Client --- Connects --- E-Lins Router/Windows/Other Router as L2TP Server:
No need add the route.

3.3.7.4 Tunnel

Tunnel Feature
The H720 Tunnel feature supports two GRE.

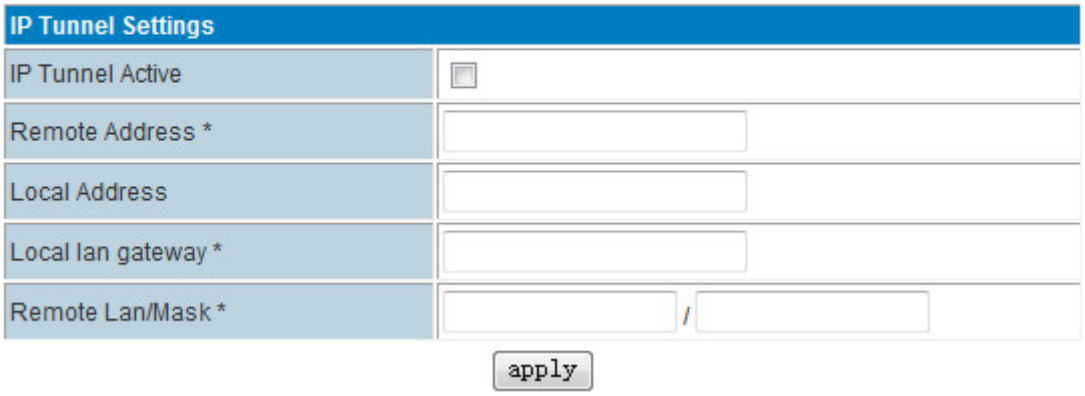


GRE2



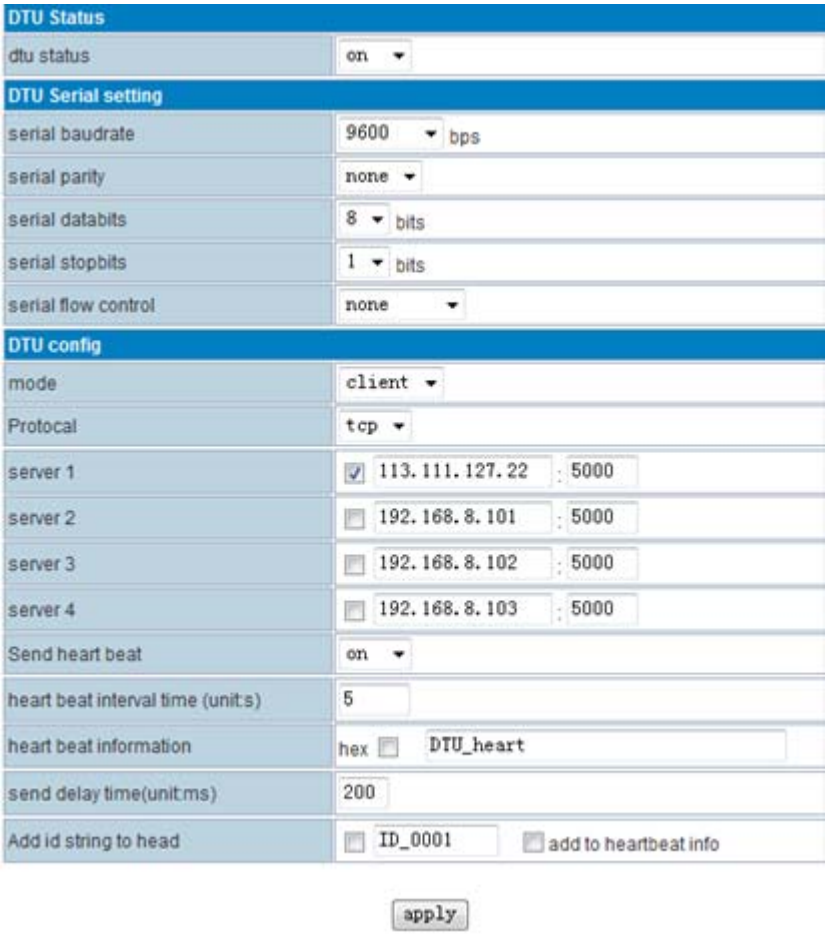
IP Tunnel Feature

IP Tunnel



3.3.8 DTU Settings (Serial to Cellular Gateway Feature)

Notes: this feature is for H720 with DTU option only.



This section is mainly about DTU settings.

- **DTU status:** open and close DTU

DTU Serial setting

- **serial baudrate:** support 300/1200/2400/4800/9600/19200/38400/57600/115200bps
- **serial parity:** support none/odd/even
- **serial databits:** support 7 bits and 8 bits
- **serial stopbit:** support 1 bits and 2 bits
- **serial flow control:** support hardware/software

DTU config

- **mode:** can configure as client or server.
- **Protocol:** support TCP/UDP
- **server 1~server 4:** fill in the centre server IP or Domain name and port. If you configure one server, the data will transfer to this server. If you configure one more servers, the data will transfer to all the servers at the same time.
- **Send heart beat:** open or close heart beat.
- **heart beat interval time:** set interval time to send each heart beat
- **heart beat information:** define the content of heart beat
- **send delay time:** send waiting time to send data.

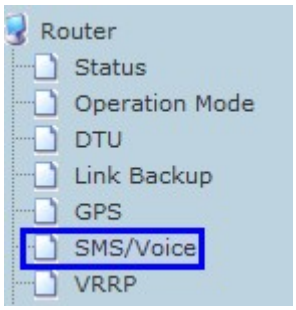
- **Add id string to head:** add an ID string in the data or heartbeat.

3.3.9 SMS/Voice Control (option)

Notes: this feature is for H720 with SMS/Voice option only.

3.3.9.1 SMS

Step 1) click "SMS/Voice"



Step 2) Activate the SMS feature

SMS/Voice Settings

SMS/Voice Command Settings				
Message/Voice status	On			
Fix Error For Some Network	☐			
telephone number				
Number 1	+8613312345678	☑ SMS	☐ VOICE	☐ ALARM
Number 2	666	☑ SMS	☐ VOICE	☐ ALARM
Number 3		☐ SMS	☐ VOICE	☐ ALARM
Number 4		☐ SMS	☐ VOICE	☐ ALARM
Number 5		☐ SMS	☐ VOICE	☐ ALARM
Number 6		☐ SMS	☐ VOICE	☐ ALARM
Number 7		☐ SMS	☐ VOICE	☐ ALARM
Number 8		☐ SMS	☐ VOICE	☐ ALARM
Number 9		☐ SMS	☐ VOICE	☐ ALARM
Number 10		☐ SMS	☐ VOICE	☐ ALARM

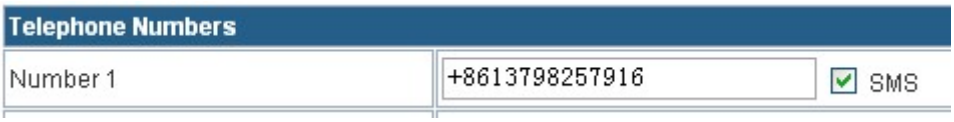
Message/Voice status: select “on” to enable SMS feature. “off” to disable SMS feature.
Fix Error For Some Network: Some networks use different code format. Please keep uncheck to try. If not work, try to check it.
Telephone number: Sender’s phone number input. Totally can input 10 groups.
Number 1….10: input the dedicated sender’s phone number. Do not forget to Tick “SMS”
Step 3) Define the SMS command

SMS	
SMS Command	on
Send ack SMS	on
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

SMS Command: select “on” to enable it. “off” to disable it.
Send ack SMS: If select “on”, the router will send command feedback to sender’s phone number. If select “off”, the router will not send command feedback to sender’s phone number.
Reboot Router Command: input the command for “reboot” operation, default is “reboot”.
Get Cell Status Command: input the command for “router cell status checking” operation, default is “cellstatus”. For example, if we send “cellstatus” to router, router will feedback the status to sender such as “Router SN: 086412090002 cell_link_up”, which indicated the router SN number and Cell Working Status.
Cell link-up Command: input the command for “router cell link up” operation, default is “cellup”. If router gets this command, the Router Cell will be online.
Cell link-down Command: input the command for “router cell link down” operation, default is “celldown”. If router gets this command, the Router Cell will be offline.
DIO_0 Set Command: input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_0 Reset Command: input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_1 Set Command: input the command for I/O port 1. For SMS feature, please keep the parameter default.
DIO_1 Reset Command: input the command for I/O port 1. For SMS feature, please keep the parameter default.
DIO Status Command: input the command for I/O port status. For SMS feature, please keep the parameter default.

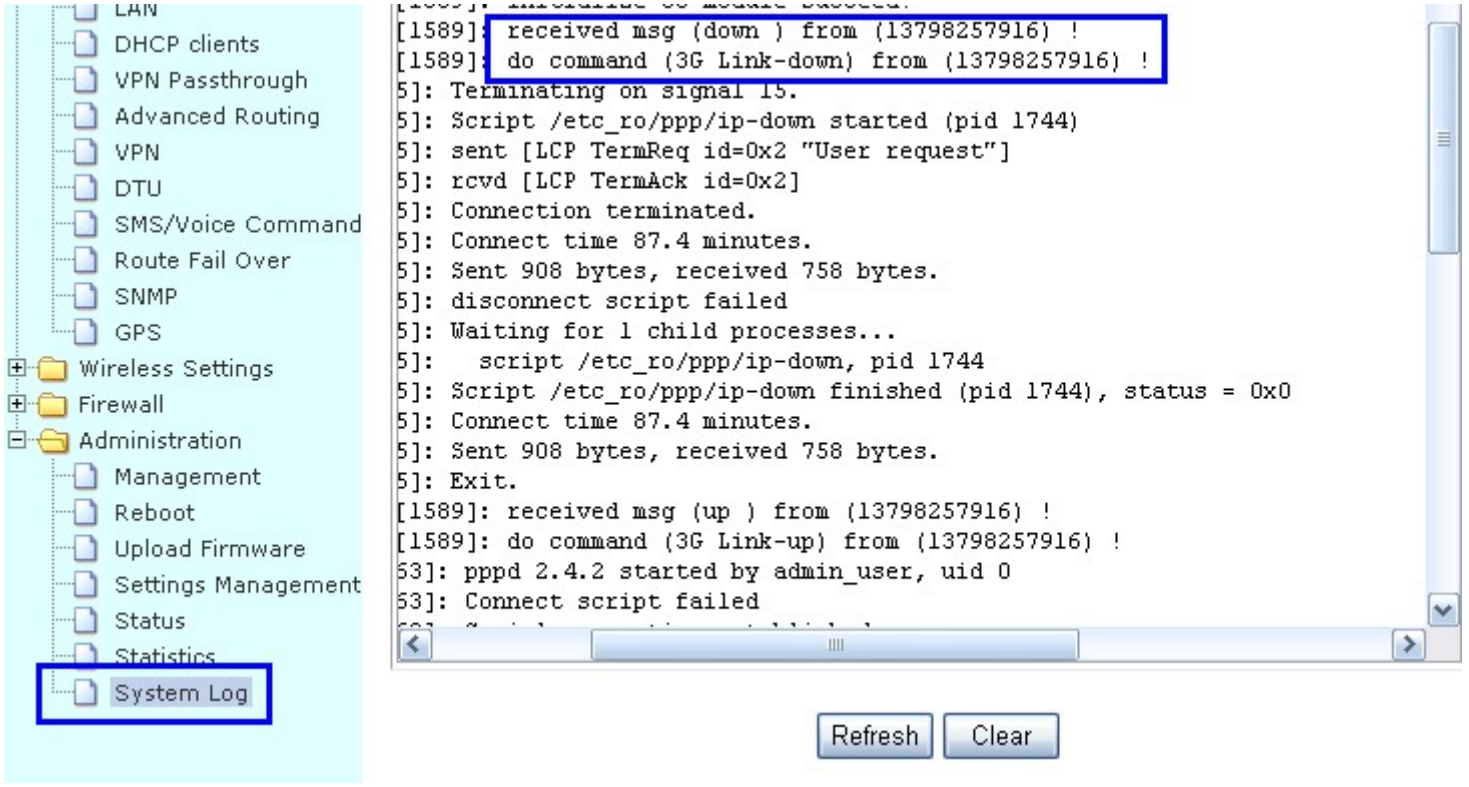
Step 4) Click apply **button to save**

Note:
1) SIM Card inserted in the router must support SMS or Voice.
2) Try to add zone code or country code if the command cannot get working.
For example, we set the number 13798257916, and if the command cannot work, please try to put the country code 86 as followed picture.

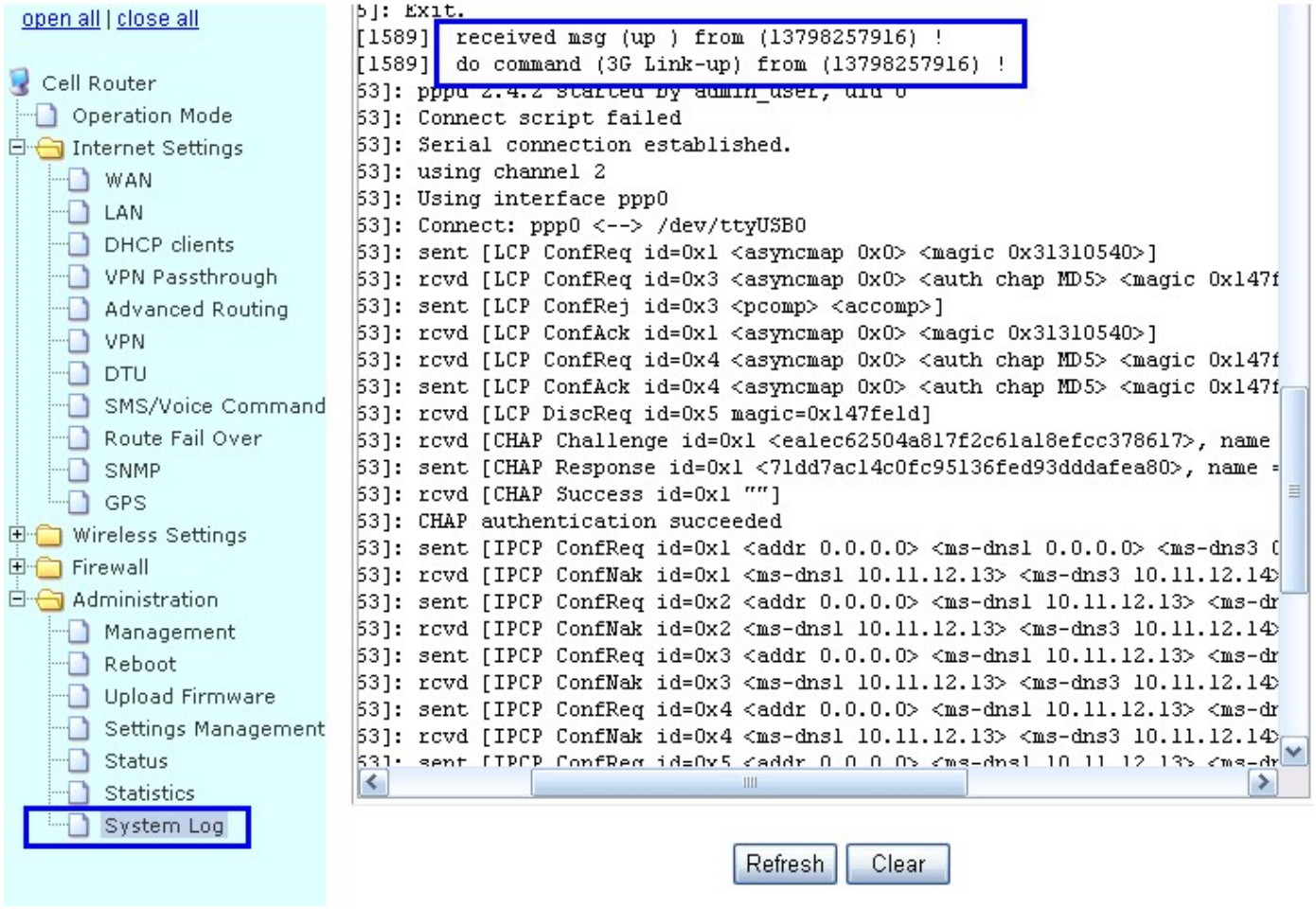


Here set an example, we set the parameters for SMS/Voice as above.

1) Use the cell phone 13798257916 to send “down” to the router’s SIM Card Number, the router will receive the “down” command, and it will be off-line. And in the System Log, we shall find a info as following marks.



2) Use the cell phone 13798257916 to send “up” to the router’s SIM Card Number, the router will receive the “up” command, and it will be online. And in the System Log, we shall find a info as following marks.



3.3.9.2 Voice (option)

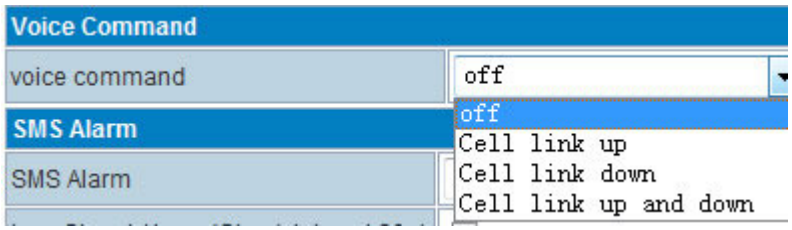
Notes: This feature may not work due to network compatibility or module modem.

Step 1) enable voice feature

Step 2) set the dedicated phone number for voice control

telephone number		
number 1	13798257916	SMS ☑ VOICE ☐ ALARM
number 2		SMS ☐ VOICE ☐ ALARM
number 3		SMS ☐ VOICE ☐ ALARM
number 4		SMS ☐ VOICE ☐ ALARM
number 5		SMS ☐ VOICE ☐ ALARM
number 6		SMS ☐ VOICE ☐ ALARM
number 7		SMS ☐ VOICE ☐ ALARM
number 8		SMS ☐ VOICE ☐ ALARM
number 9		SMS ☐ VOICE ☐ ALARM
number 10		SMS ☐ VOICE ☐ ALARM

Step 3) Configure the voice command



- **off:** disable the voice control
- **Cell link up:** with this selection, the voice control can only control the Router Cell online.
- **Cell link down:** with this selection, the voice control can only control the Router Cell offline.
- **Cell link up and down:** with this selection, the voice control can control the Router Cell offline and online. 1st control to be online, 2nd control to be offline.

3.3.9.3 Alarm via SMS (option)

With this feature, the Router will send SMS to pre-defined phone number for warning and alarm.

Step 1) enable Alarm feature

SMS/Voice Command Settings	
Message/Voice status	on

Step 2) set the dedicated phone number for SMS Alarm

telephone number		
number 1	13798257916	SMS VOICE ALARM
number 2		SMS VOICE ALARM
number 3		SMS VOICE ALARM
number 4		SMS VOICE ALARM
number 5		SMS VOICE ALARM
number 6		SMS VOICE ALARM
number 7		SMS VOICE ALARM
number 8		SMS VOICE ALARM
number 9		SMS VOICE ALARM
number 10		SMS VOICE ALARM

Step 3) Configure the voice command

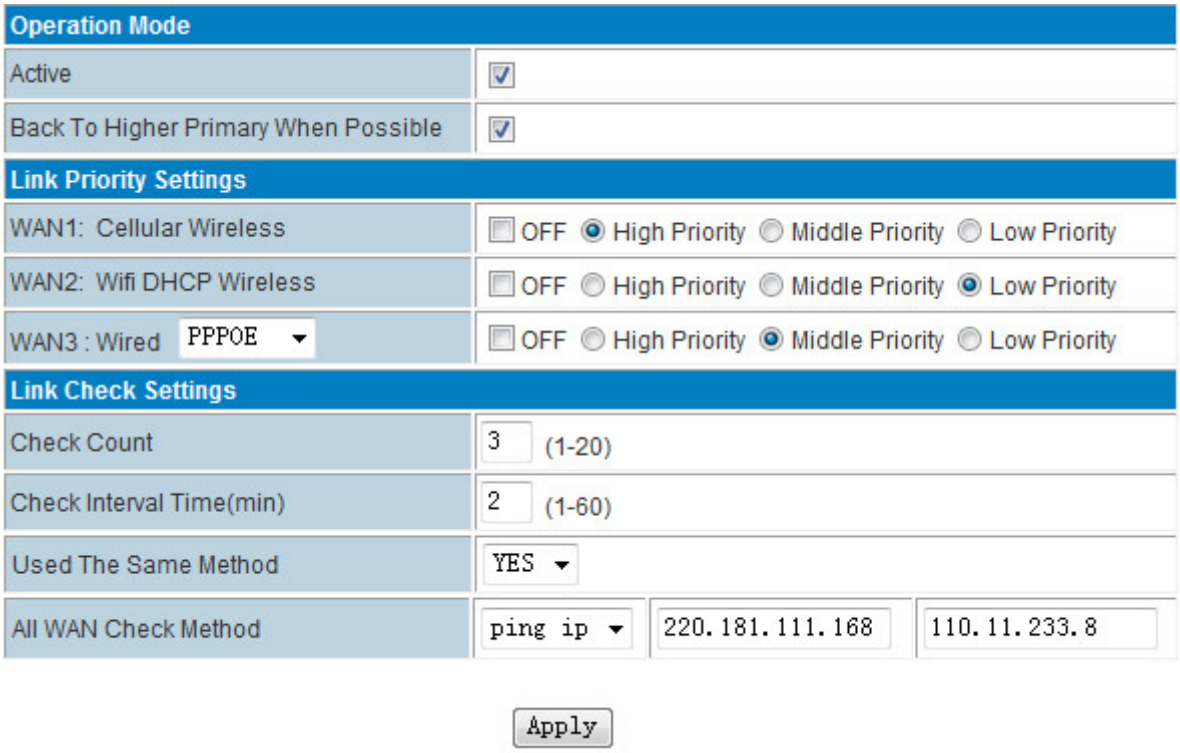
SMS Alarm	
SMS Alarm	on
Low Signal Alarm (Check Interval:20s)	
when equal and lower level(0~2)	0
check count for alarm	10
normal signal count for check again	8

apply

normal signal count for check again: to prevent repeating alarm.

With the setting above, the H720 router checks signal every 20s, if all of 10 times with signal 0 quality, H720 Router will send Alarm via SMS. After the alarm, this feature will be locked, but H720 Router keeps checking signal quality every 20s, if continuous 8 times are with signal quality better than 0, the alarm feature will be unlocked, then the alarm feature starts work again.

3.3.10 Link Backup/Route Redundancy (option)



Operation Mode

- **Active:** disable or enable the link redundancy
- **Back to Higher Primary When Possible:**
  If you tick this option, once the H720 Router work on backup link, whether it fails or not, it will return to main link if main link turns to be okay.
  If not tick this option, the H720 Router will not return to main link until the current link fails.

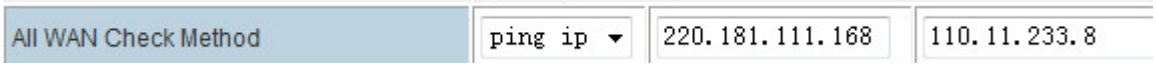
Link Priority Settings

- **WAN1: Cellular Wireless**
- **WAN2: WiFi DHCP Wireless**
- **WAN3: Wired XXX (XXX=DHCP, STATIC, PPPOE)**

OFF: Check *OFF Blank* to disable or uncheck to enable the link redundancy
Priority*:* High Priority, Middle Priority, Low Priority.

Link Check Settings

- **Check Count:** for example, set it as 3. Router check link live 3 times.
- **Check Interval Time(min):** for example, set is as 2. Router check link live every 2 minutes.
- **Used The Same Method:**
  If set it as *YES*, WAN1/WAN2/WAN3 use same check IP or domain name from *ALL WAN Check Method*.



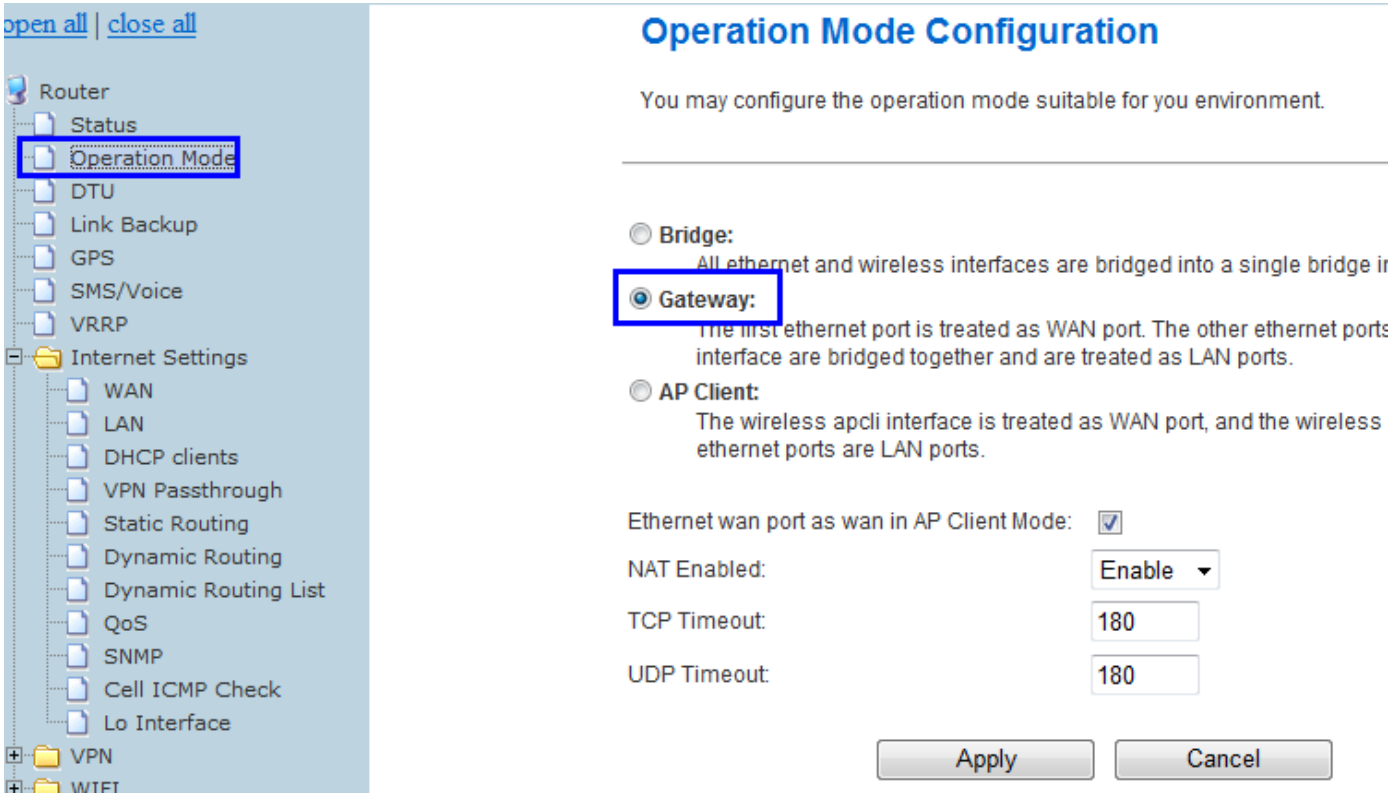
If set is as *NO*, users need set WAN1/WAN2/WAN3 live check IP or domain name separately.

Used The Same Method	NO		
WAN1 Check method	ping ip	google.com	118.113.114.2
WAN2 Check method	ping ip	163.com	222.113.114.28
WAN3 Check method	ping ip	8.8.8.8	112.113.114.222

- **All WAN Check Method:** define the link live check IP or domain name.

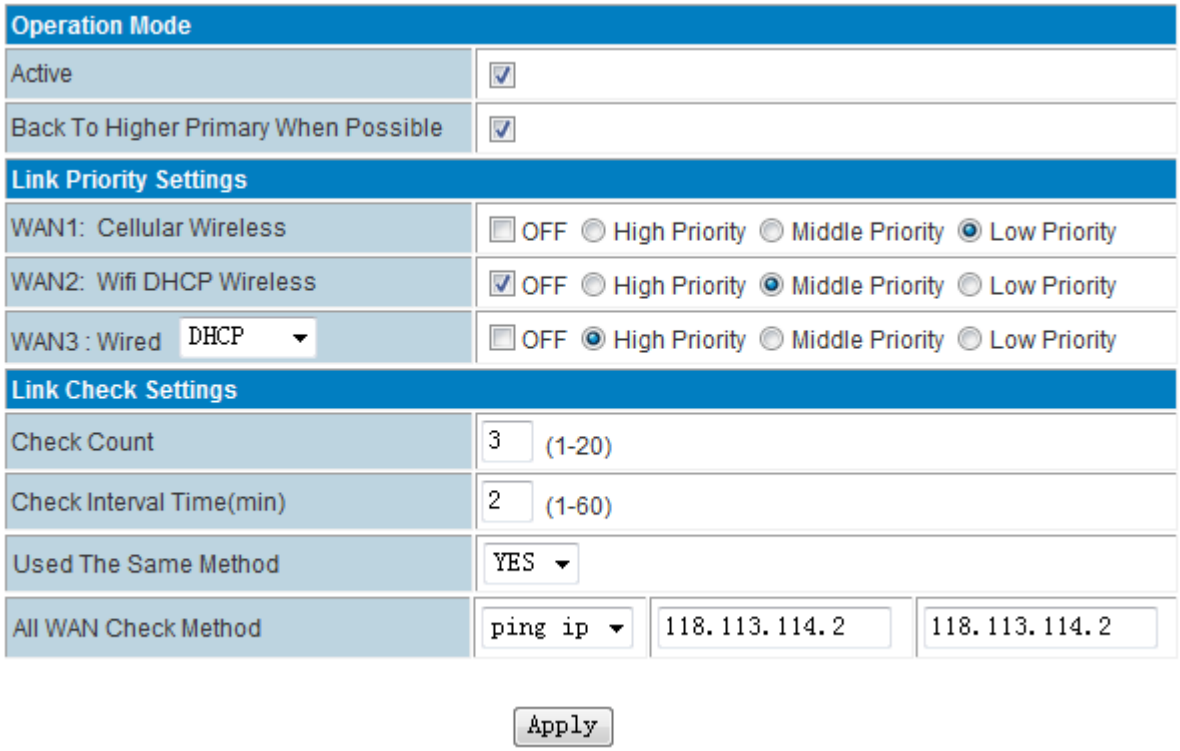
How to use *Link Backup* feature? Here set an example as follows,
H720 WAN RJ45 connects to upper side router LAN RJ45.

Confirm the upper side router connects to internet, and its DHCP is working.
First, Set H720 work mode as default “Gateway mode”.

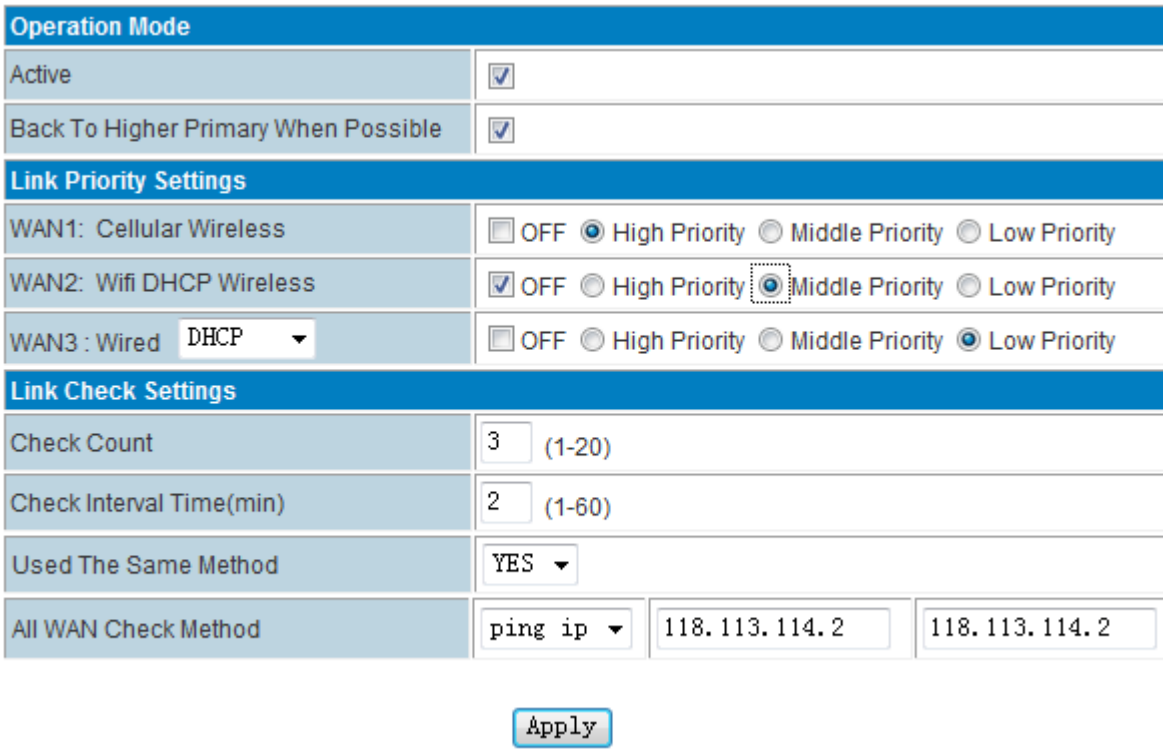


Step 1) activate it. Tick “Active”
Step 2) click at “Back To Higher Primary When Possible”
Step 3) Choose the network priority.

A. Cellular as Low Priority, DHCP as High Priority
With this configuration, the router will work at DHCP mainly, and if DHCP is failed, it switches to cellular automatically after some time. And it will automatically switch to DHCP when DHCP is fixed.

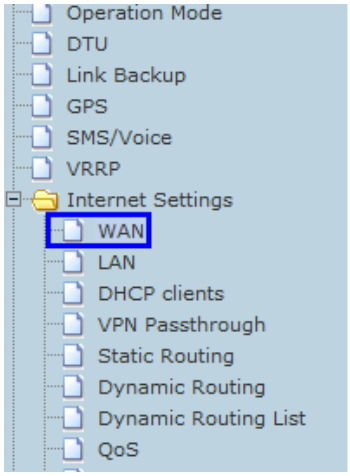


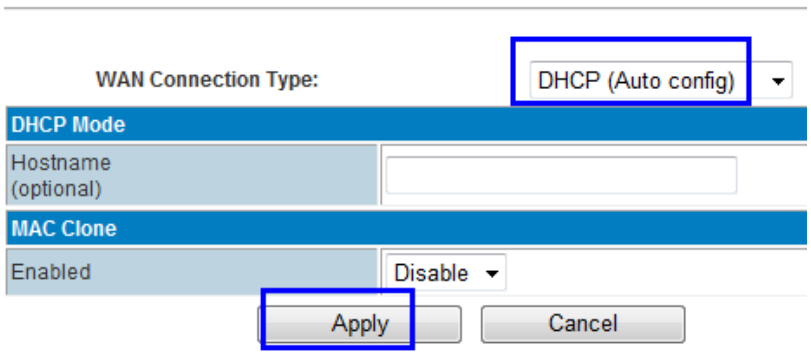
B. Cellular as High Priority, DHCP as Low Priority
With this configuration, the router will work at cellular mainly, and if cellular is failed, it switches to DHCP automatically after some time. And it will automatically switch to cellular when cellular is fixed.



DHCP: here can be DHCP WiFi Client.

Step 4) if Step 3 choose A, please set WAN as *DHCP* and click “Apply”





The H720 gets WAN IP and default gateway from the up-side router.

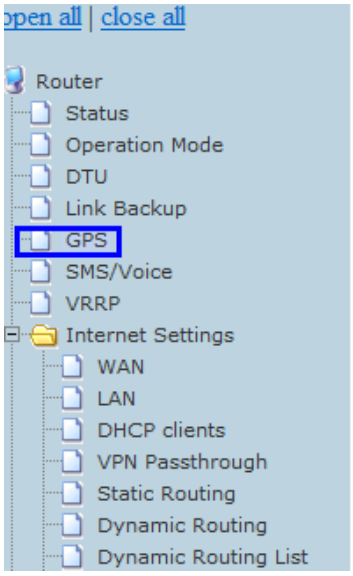
Product Model	3G Router
Software Version	2.4.6 (Aug 5 2011)
Hardware Version	1.0.0
Device ID	280230312C080435
System Up Time	36 mins, 15 secs
Operation Mode	Gateway Mode
3G Info	
Signal Strength	27 , (0-31)
Attachment State	CDMA/EVDO HYBRID
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.0.104
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	192.168.0.1
Secondary Domain Name Server	
MAC Address	00:0C:43:30:32:12

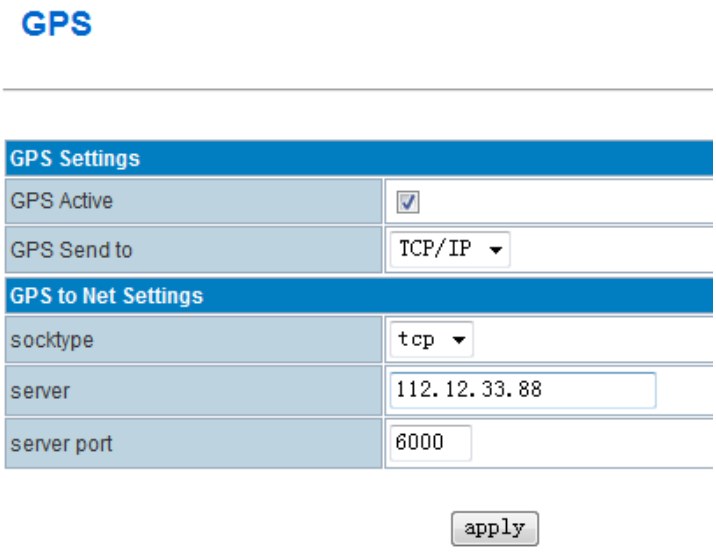
If Step 3 choose B, set WAN as *CELL NETWORK* and click “Apply”, it will work on cellular first, and switch to LAN RJ45 cable WAN or WiFi client mode if cellular network is failed.

Notes: for route fail over feature, please first make the main network and backup network both work before activate the fail over feature.

3.3.11 GPS (option)

Notes: GPS feature is for H720 router with GPS option only.





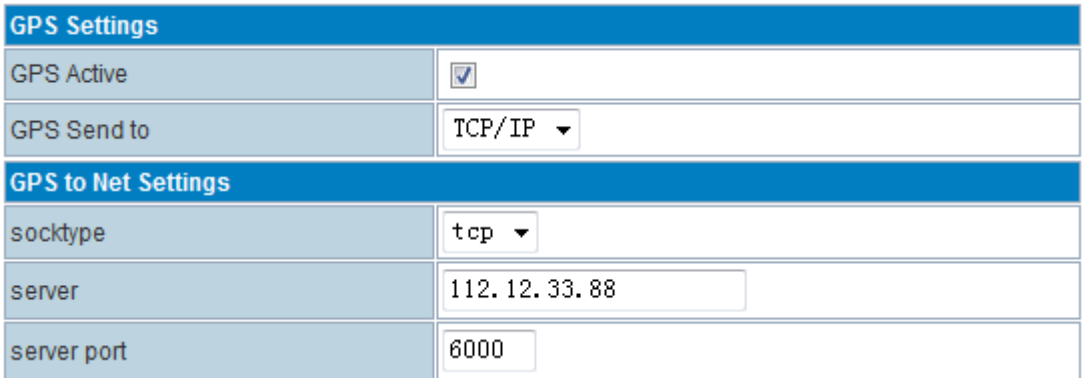
➢ **WAN Connection Type**

- **GPS Active**: please click it once you need use GPS feature.
- **GPS Send to**: Choose “Serial” or “TCP/IP” method. The router only receives the GPS signal, will not process it. It will just send the received GPS signal to your GPS processor.
  If the GPS processor is connected to the 3G Router via Serial Port, then please choose “Serial”.

If choose “TCP/IP” method, please configure the *GPS to NET Settings*.
If choose “Serial” method, please configure the *GPS to Serial Settings*.

➢ **GPS to NET Settings**

- **Sock type:** tcp or udp
- **Server:** fill in the correct destination server IP or domain name
- **Server port:** fill in the correct destination server port



➢ **GPS to Serial Settings**

- **serial baudrate:** 9600/19200/38400/57600/115200bps for choice
- **serial parity:** none/odd/even for choice
- **serial databits:** 7/8 for choice
- **serial stopbits:** 1/2 for choice

- **serial flow control:** none/hardware/software for choice

GPS Settings	
GPS Active	☑
GPS Send to	Serial
GPS to Serial Settings	
serial baudrate	115200 bps
serial parity	none
serial databits	8 bits
serial stopbits	1 bits
serial flow control	none
Comment: Do not used gps with dtu when send to serial!	

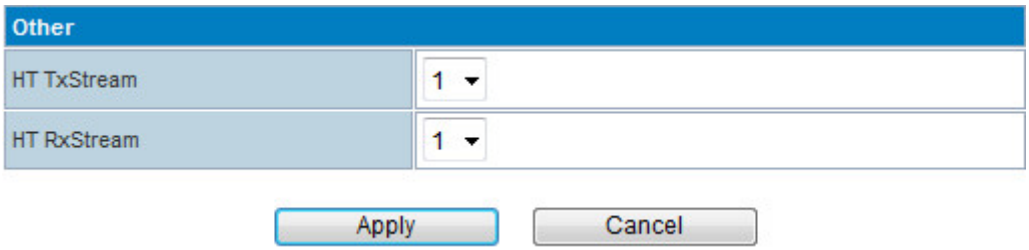
3.3.12 WiFi Wireless Settings

Notes: WiFi Feature is H720 with WiFi only

3.3.12.1 Basic Wireless Settings

Wireless Network	
Radio On/Off	RADIO OFF
WiFi On/Off	WiFi OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	Cell_AP_120901D4 Hidden ☐ Isolated ☐
Multiple SSID1	Hidden ☐ Isolated ☐
Multiple SSID2	Hidden ☐ Isolated ☐
Multiple SSID3	Hidden ☐ Isolated ☐
Multiple SSID4	Hidden ☐ Isolated ☐
Multiple SSID5	Hidden ☐ Isolated ☐
Multiple SSID6	Hidden ☐ Isolated ☐
Multiple SSID7	Hidden ☐ Isolated ☐
Broadcast Network Name (SSID)	◉ Enable ○ Disable
AP Isolation	○ Enable ◉ Disable
MBSSID AP Isolation	○ Enable ◉ Disable
BSSID	08:66:01:00:04:A2
Frequency (Channel)	2412MHz (Channel 1)

HT Physical Mode	
Operating Mode	◉ Mixed Mode ○ Green Field
Channel BandWidth	○ 20 ◉ 20/40
Guard Interval	○ Long ◉ Auto
MCS	Auto
Reverse Direction Grant(RDG)	○ Disable ◉ Enable
Extension Channel	2432MHz (Channel 5)
Space Time Block Coding(STBC)	○ Disable ◉ Enable
Aggregation MSDU(A-MSDU)	◉ Disable ○ Enable
Auto Block ACK	○ Disable ◉ Enable
Decline BA Request	◉ Disable ○ Enable
HT Disallow TKIP	○ Disable ◉ Enable



➢ **Wireless Network**

- **Radio On/Off:** If it indicates *RADIO OFF*, it means the radio is on. You can click *RADIO OFF* to disable it. If it indicates *RADIO ON*, it means the radio is off. You can click *RADIO ON* to enable it.
- **WiFi On/Off:** If it indicates *WiFi OFF*, it means the radio is on. You can click *WiFi OFF* to disable it. If it indicates *WiFi ON*, it means the radio is off. You can click *WiFi ON* to enable it. If WiFi is ON, the WiFi LED will be light on. If WiFi is OFF, the WiFi LED will be off.
- **Network Mode:** 802.11b/g/n mode selection
- **Network Name(SSID):** Input the SSID, *Hidden* & *Isolated* for option. If tick *Hidden*, the WiFi SSID will not broadcast.
- **Multiple SSID1:** H720 Router supports multiple SSID 8 groups totally.
- **Broadcast Network Name (SSID)**: Enable or Disable SSID broadcast.
- **BSSID**: indicates the MAC of WiFi
- **Frequency (Channel):** current working frequency and channel.

3.3.12.2 WiFi Advanced Settings

Advanced Wireless	
BG Protection Mode	Auto
Beacon Interval	100 ms (range 20 - 999, default 100)
Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)
Short Preamble	Enable Disable
Short Slot	Enable Disable
Tx Burst	Enable Disable
Pkt_Aggregate	Enable Disable
IEEE 802.11H Support	Enable Disable(only in A band)
Country Code	None

Wi-Fi Multimedia	
WMM Capable	Enable Disable
APSD Capable	Enable Disable
DLS Capable	Enable Disable
WMM Parameters	WMM Configuration

3.3.12.3 Wireless Security/Encryption Settings

Select SSID	
SSID choice	Cell AP 120901D4

"Cell AP 120901D4"	
Security Mode	Disable

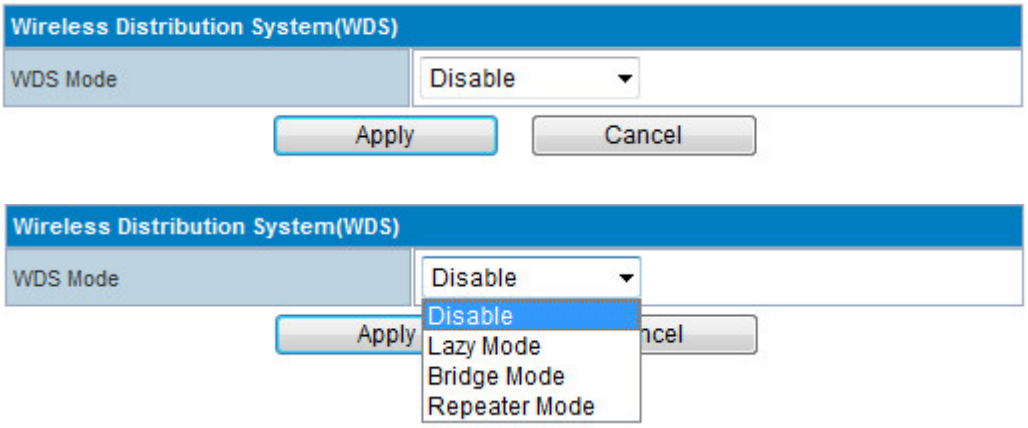
Access Policy	
Policy	Disable
Add a station Mac:	

- **SSID choice:** select the SSID you want to configure
- **Security Mode:** include Disable, OPENWEB, SHAREDWEB, WEBAUTO, WPA, WPA-PSK,

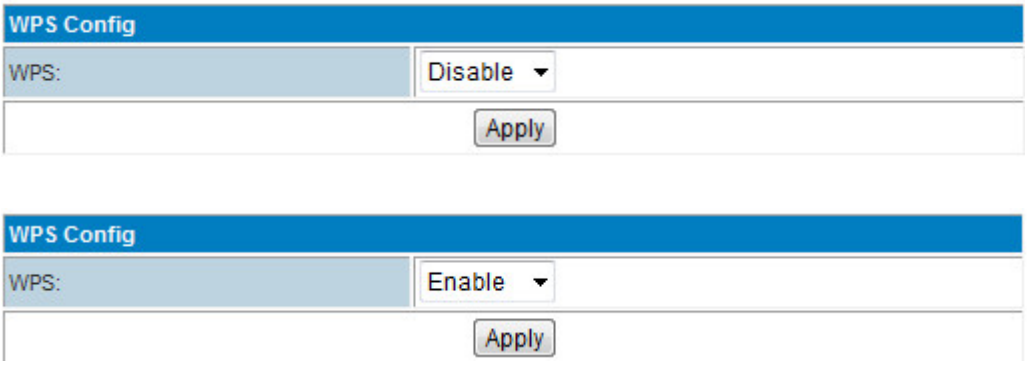
WPA2, WPA2-PSK, wpa-psk/wpa2-psk, wpa1/wpa2, 802.1X.

- **Access policy:** setting the MAC list for access or deny.
  Disable: close the *Access Policy*.
  Allow: allow the assigned MAC enable to use WiFi
  Reject: refuse the assigned MAC enable to use WiFi

3.3.12.4 WDS



3.3.12.5 WPS



3.3.12.6 Station List

Wireless Network							
MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC

3.3.12.7 Statistics

Transmit Statistics	
Tx Success	9
Tx Retry Count	0, PER=0.0%
Tx Fail after retry	0, PLR=0.0e+00
RTS Sucessfully Receive CTS	0
RTS Fail To Receive CTS	0
Receive Statistics	
Frames Received Successfully	42309
Frames Received With CRC Error	39890, PER=48.5%
SNR	
SNR	n/a, n/a, n/a

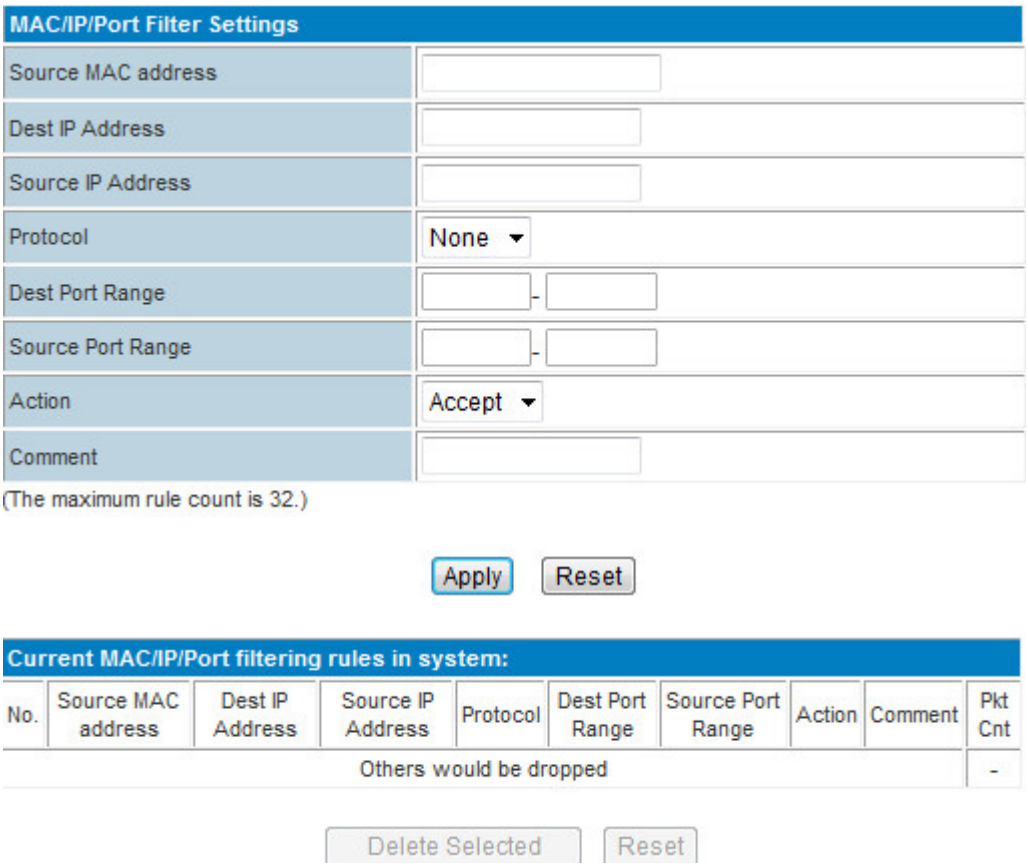
Reset Counters

3.3.13 Firewall

3.3.13.1 MAC/IP/Port Filter Settings

Basic Settings	
MAC/IP/Port Filtering	Disable
Default Policy -- The packet that don't match with any rules would be:	Dropped.

Apply Reset



This section is mainly about MAC/IP/Port filter settings

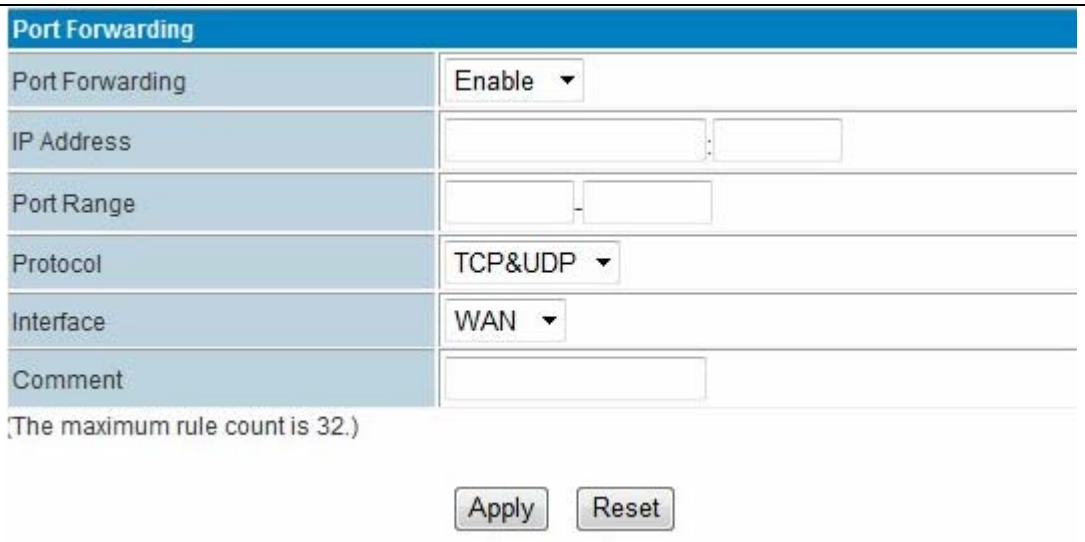
- **Basic Settings**
- **MAC/IP/Port Filtering:** Disable or Enable
- **Default Policy -- The packet that don't match with any rules would be:** Dropped/Accepted

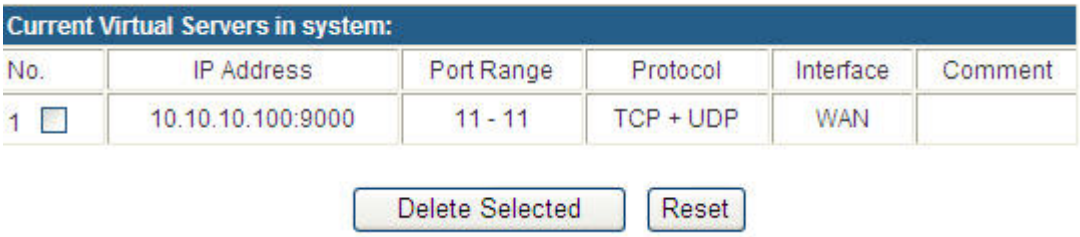
- **MAC/IP/Port Filter Settings**
- **Source MAC address:** Fill the MAC address which needs to filter.
- **Dest IP Address:** IP of the target destination computer(the computer which the data packet will be sent to)
- **Destination Port Range:** port range of target computer
- **Source Port Range:** port range of the computer which sends data
- **Action:** choose *Accept* or *Drop*
- **Comment:** input comment here

- **Current MAC/IP/Port filtering rules in system**

It display the configured rules in this table.

3.3.13.2 Port Forwarding (Virtual Server Settings)(NAT/NAPT)

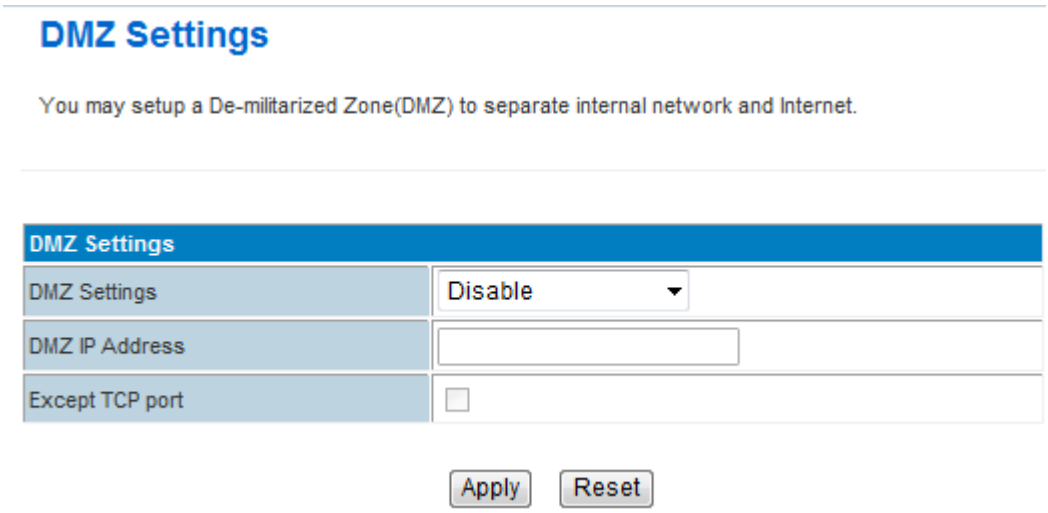




Port forwarding is the process that your router or firewall uses to sort the right kind of network data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number. By using port forwarding, the router or firewall sends the correct data to the correct place.

- Port Forwarding: Enable and disable the feature.
- IP address: fill the IP address of forwarding. The first blank is for local IP address, the second blank is for port.
- Port Range: fill the External Port of forwarding.
- Protocol: TCP&UDP, TCP only, UDP only for choice
- Interface: Recommend to select “WAN”
- Comment: fill in comment for the rules.

3.3.13.3 DMZ Host

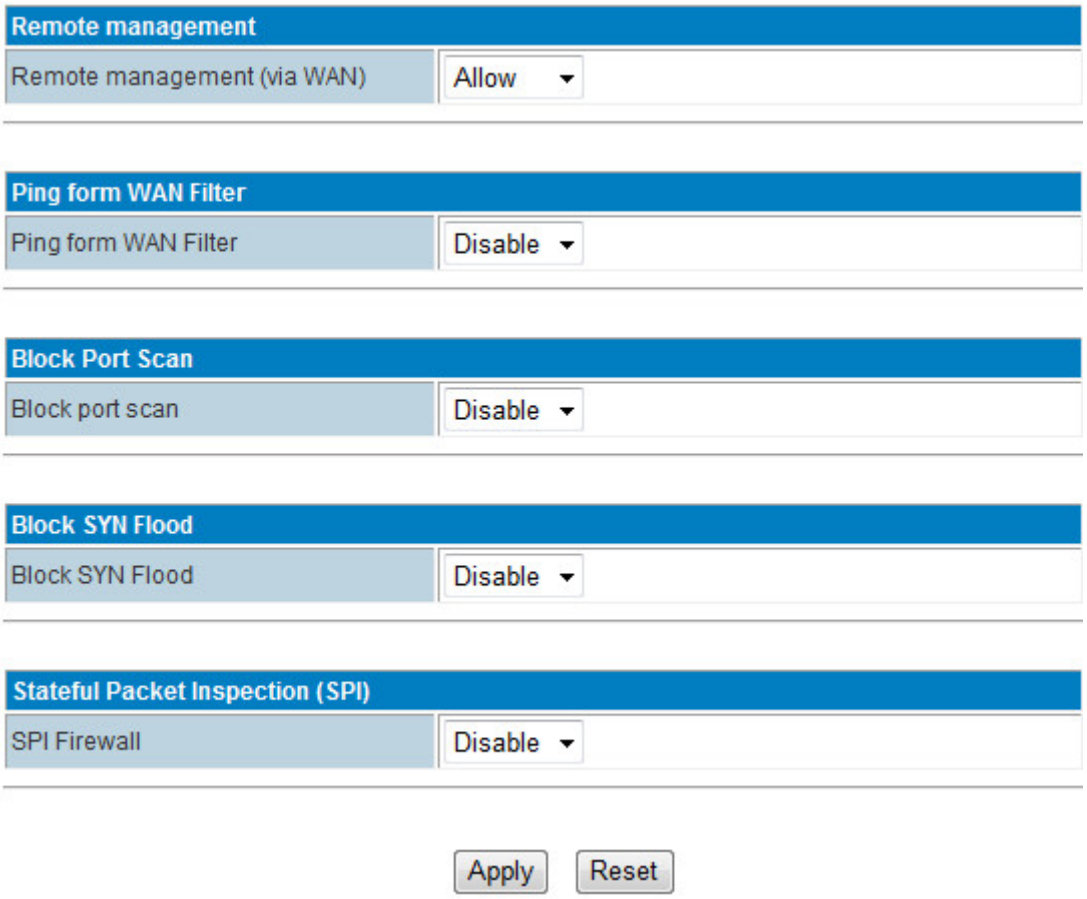


In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- **DMZ Settings**: open and close DMZ feature.
  Disable: close DMZ feature
  Enable: enable the DMZ feature for assigned IP
  Enable Super DMZ: enable the DMZ feature for assigned MAC
- **DMZ IP Address**: Please Enter the IP address of the computer which you want to set as DMZ host
- **DMZ MAC Address**: Please Enter the MAC address of the computer which you want to set as DMZ host
- **Except TCP port**: disable or enable for TCP port

Note: When DMZ host is settled, the computer is completely exposed to the external network; the firewall will not influence this host.

3.3.13.4 System Security

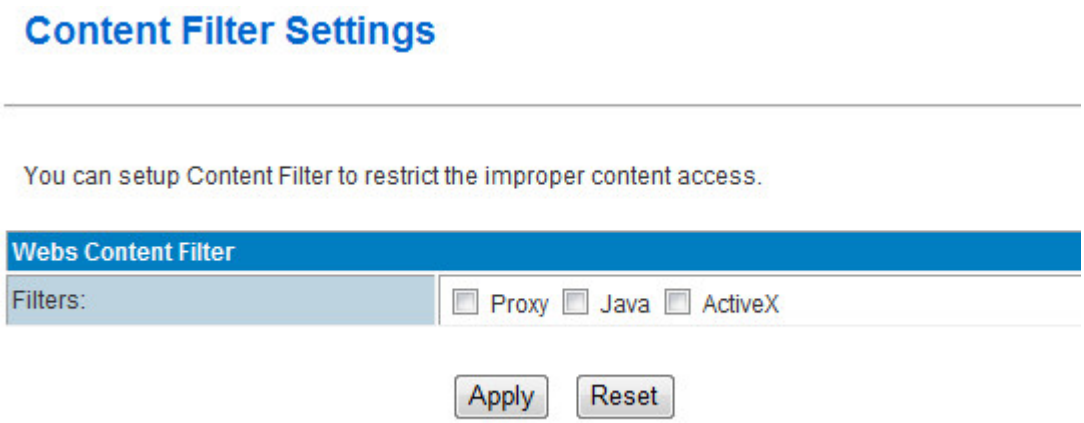


Include *Remote management*, *Ping from WAN Filter, Block Port Scan*, *Block SYN Flood* and *SPI Firewall* (Stateful Packet Inspection).

3.3.13.5 Content Filter Settings

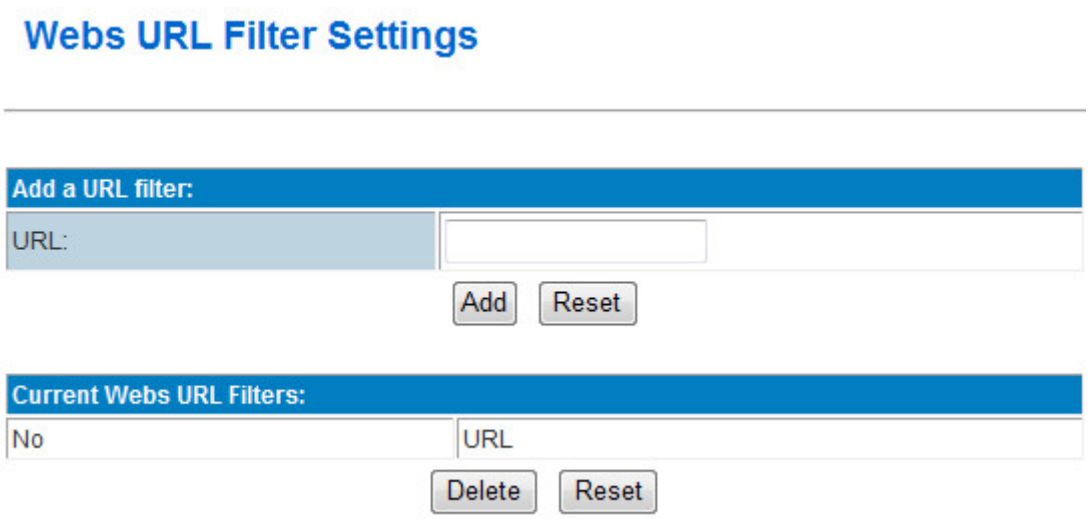
You can setup Content Fillter to restrict the improper content access, including Webs Content Settings, URL filter and Host Filter.

- **Proxy/Java/Activex Filter**



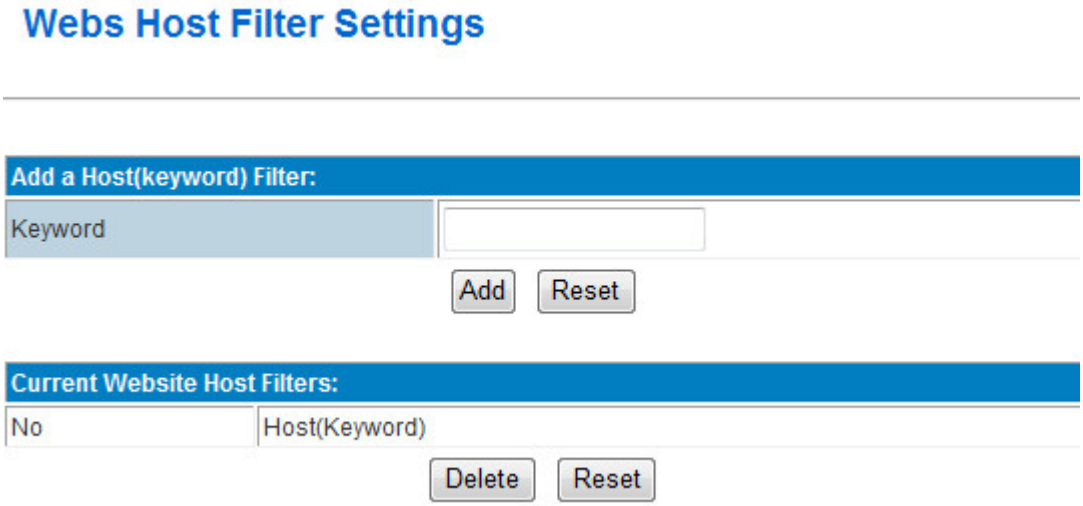
Support Proxy, Java, ActiveX filter.

- **Web URL Filter**



Fill in the URL for filter.

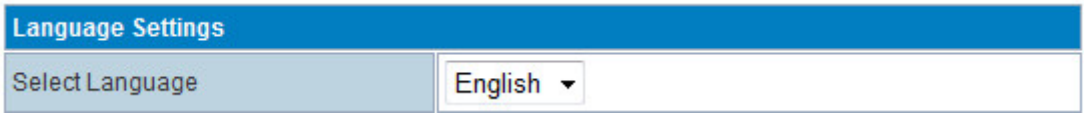
- **Web Host Filter**



3.3.14 Administration

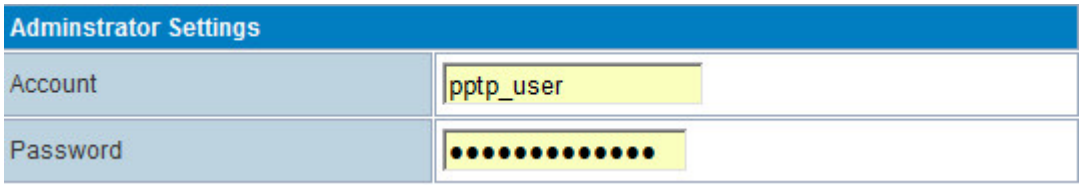
3.3.14.1 Management

- **Language Settings**



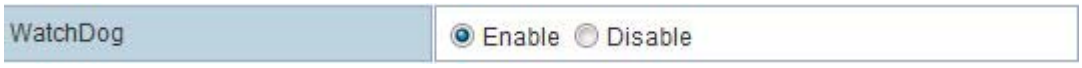
Select Web display language. Default is English. Can OEM other languages.

- **Administrator Settings**

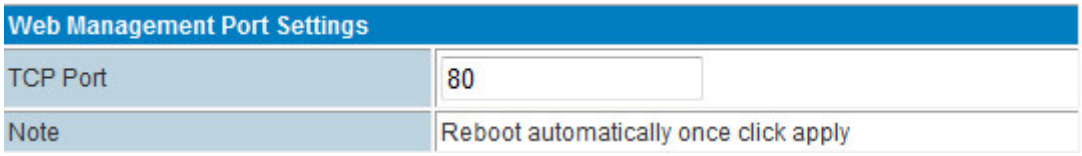


Select Web display language. Default is English. Can OEM other languages.

- **WatchDog**

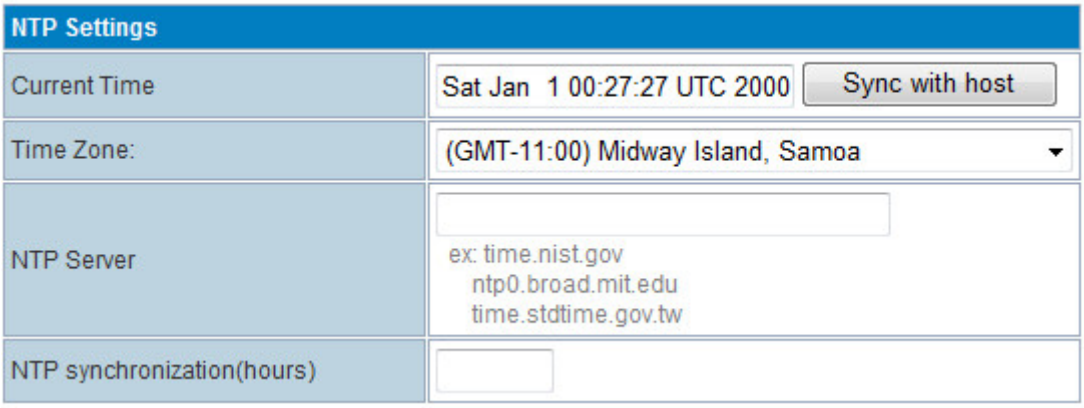


- **Web Management Port Settings**

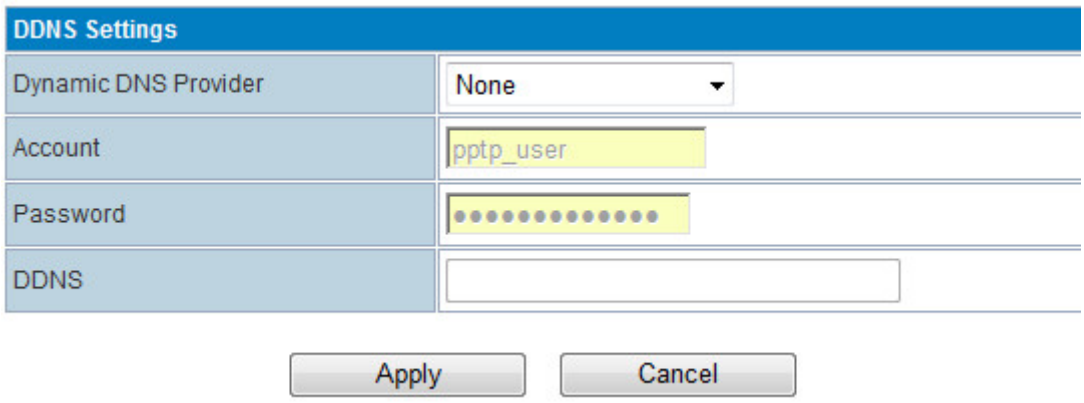


Default port is 80, sometimes if the carrier/ISP block 80 port for remote incoming, can try to modify it to port 10000.

- **NTP Settings**



- **DDNS Settings**

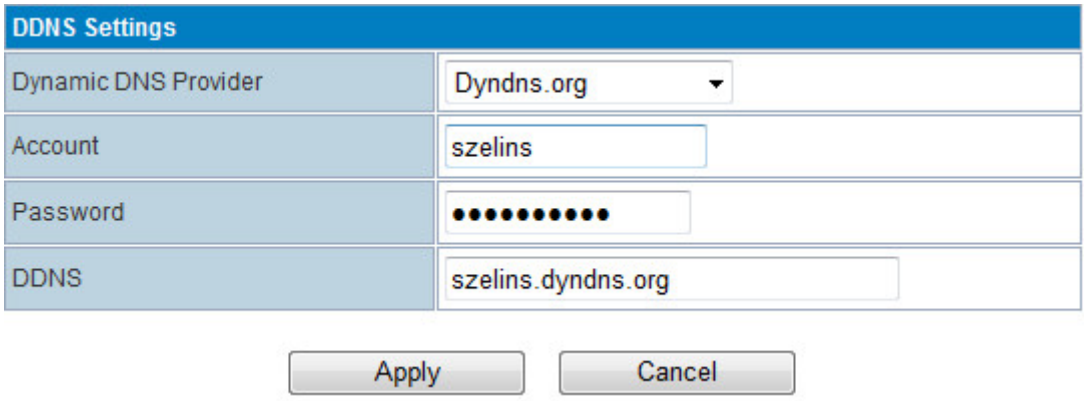


- **Dynamic DNS Provider**: choose the right DNS server provider. Supported server list.

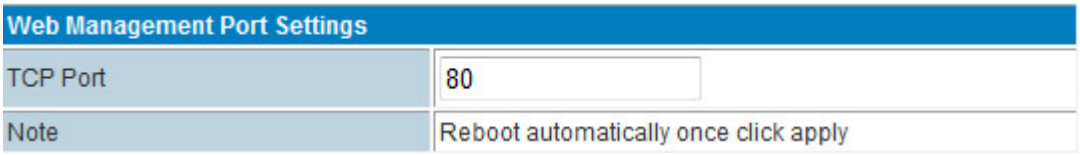
  Dyndns.org
  freedns.afraid.org
  www.zoneedit.com
  www.no-ip.com
  www.3322.org
  www.ez-ip.net
  www.justlinux.com
  www.dhs.org
  www.ods.org
  gnudip.cheapnet.net
  www.dyn.ca
  www.tzo.com
  www.easydns.com
  www.dyns.cx
  www.hn.org

- **Account**: fill in account info.
- **Password**: fill in password info.
- **DDNS**: fill in DDNS info.

Example:

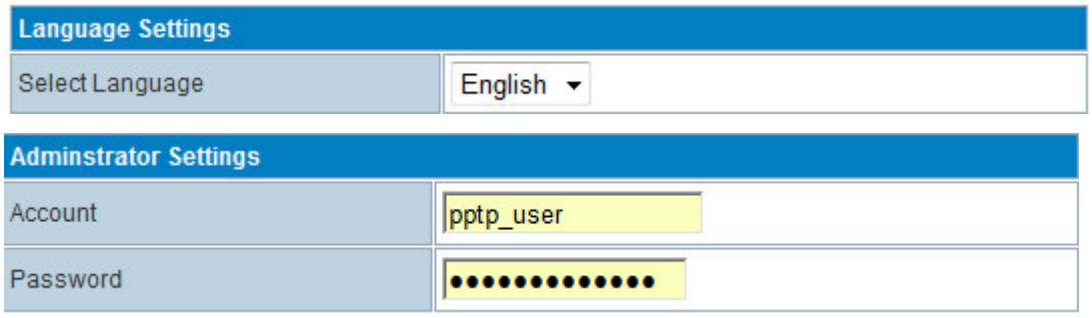


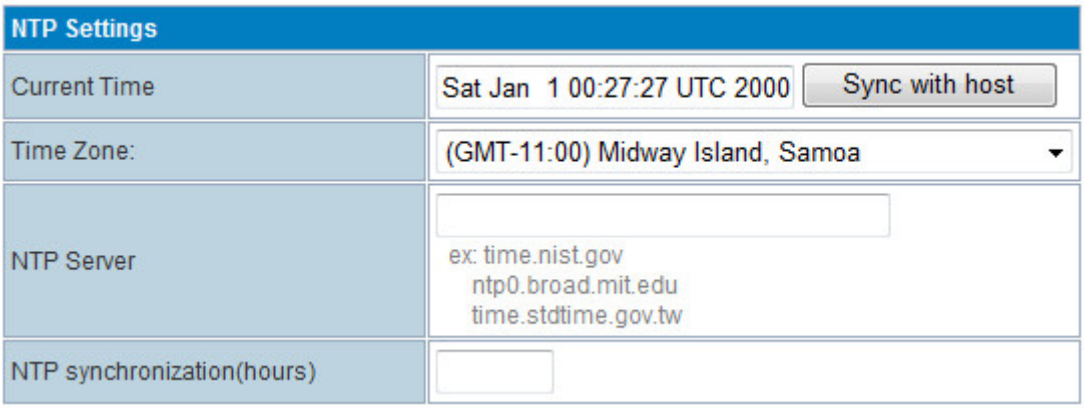
3.3.14.1.1 Router web port



Please input the web port of the router. Normally we use 80 or 10000.
Please re-power the router after changing the port number.

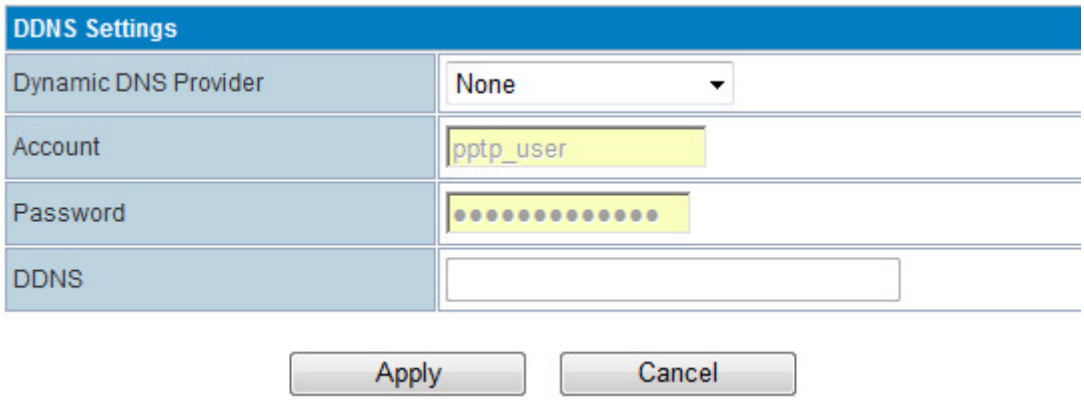
3.3.14.1.2 Language, password and NTP settings





- Select Language
- Administrator Settings. The default both are admin.
- NTP Settings

3.3.14.1.3 DDNS settings

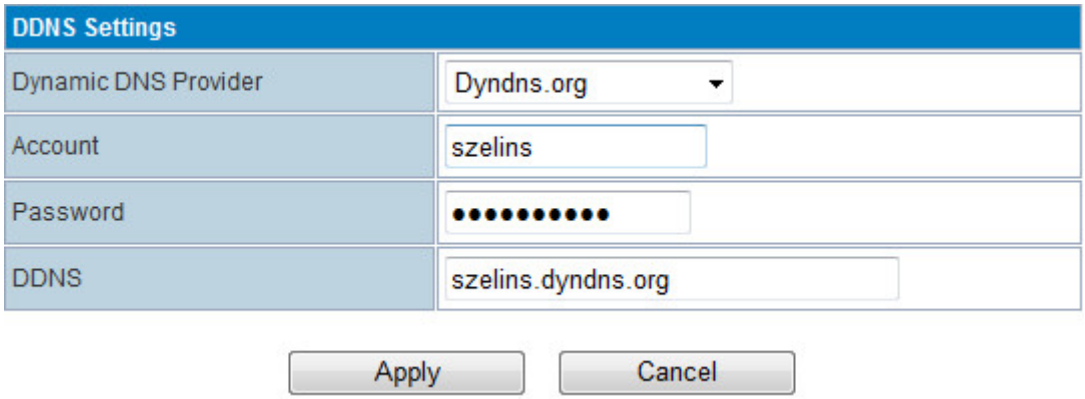


- **Dynamic DNS Provider**: choose the right DNS server provider. Supported server list.

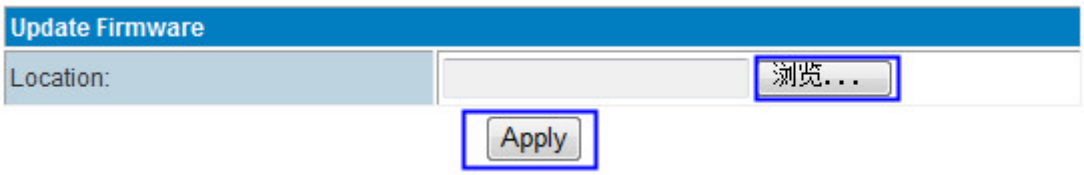
Dyndns.org
freedns.afraid.org
www.zoneedit.com
www.no-ip.com
www.3322.org
www.ez-ip.net
www.justlinux.com
www.dhs.org
www.ods.org
gnudip.cheapnet.net
www.dyn.ca
www.tzo.com
www.easydns.com
www.dyns.cx
www.hn.org

- **Account**: fill in account info.
- **Password**: fill in password info.
- **DDNS**: fill in DDNS info.

Example:



3.3.14.2 Upload Firmware (Upgrade Firmware)

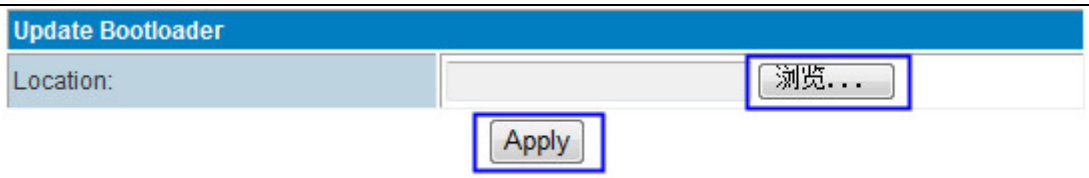


Upgrade the firmware to obtain new functionality. It takes about 2~5 minutes. Choose the correct firmware file, then click “Apply” button.

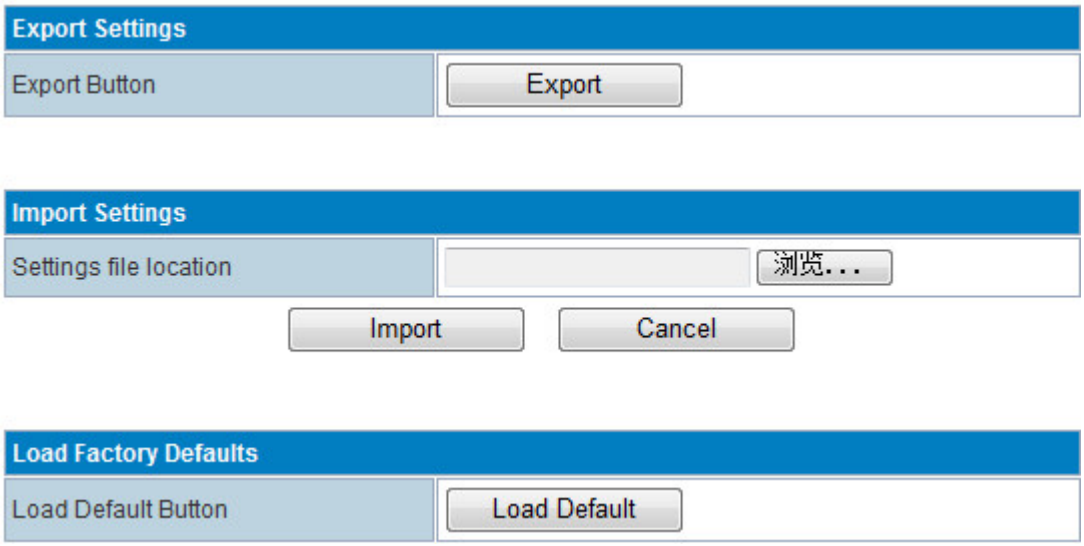
Notes:
1. highly recommend to “Load Default” the H685 Router after upload the firmware. “Load Default” will cause all the settings lost. Please backup/export the settings before “Load Default”. Or re-configure the H685 after “Load Default”.

2. Clear the IE web browser history after upgrading the firmware. The reboot the IE web browser and the router.

For some version of firmware, it requires uploading bootloader also. Please operate at the following picture. But most of time it no need do this step unless E-Lins guide or inform you to upload bootloader.



3.3.14.3 Settings Management



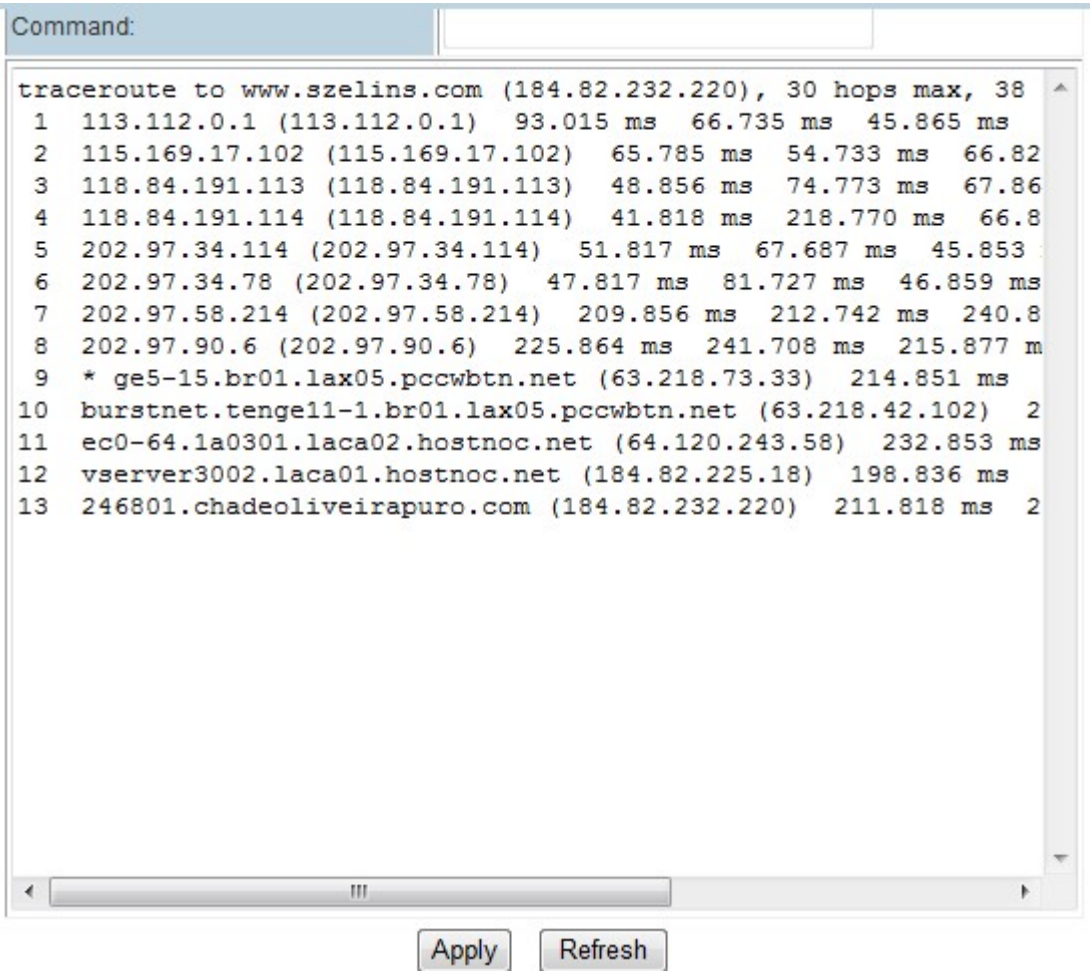
Here you can make a backup of current settings or restore previous settings of the router .

- **Export settings:** click ‘export’ to export configuration files and then select save path.
- **Import settings:** click ‘browse’, select previous backup configuration files and then click ‘Import’. Then all the previous settings will be recovered.
- **Load Factory Defaults:** click ‘Load Default’ then all settings will be restored to factory settings. This is not recommended in order to avoid the loss of important parameter

3.3.14.4 System Command

Input related command at command area. Click “Apply” button to execute. Then click “Refresh” button. The blank area will display infos.
Right now this feature support “ping” and “traceroute” command.

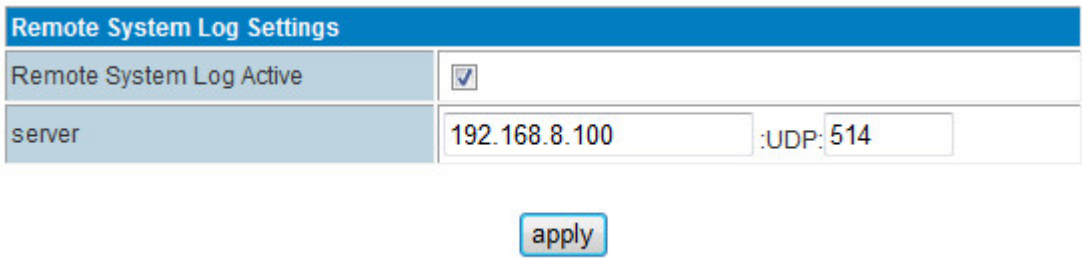
System command
Command:
traceroute www.szelins.com
Step1: input the command
Step2: click this button
Step3: click this button
Apply
Refresh



3.3.14.5 System Log

- **Remote System Log Settings**

H720 Router support export the sys log into remote server.



It requires sys log server tool.
Download link: http://www. szelins.com/download/tool/SyslogWatcherSetup-4.2.0-win32_1.rar

- **Local System Log**

System Log

```
Jan  1 00:00:16 syslogd started: BusyBox v1.12.1
Jan  1 00:00:16 kernel: fuse init (API version 7.8)
Jan  1 00:00:16 kernel: io scheduler noop registered (default)
Jan  1 00:00:16 kernel: Ralink gpio driver initialized
Jan  1 00:00:16 kernel: i2cdrv_major = 218
Jan  1 00:00:16 kernel: HDLC line discipline: version $Revision: 1.1.1.1
Jan  1 00:00:16 kernel: N_HDLC line discipline registered.
Jan  1 00:00:16 kernel: Ralink APSoC Hardware Watchdog Timer
Jan  1 00:00:16 kernel: SoftDog: cannot register miscdev on minor=130 (e
Jan  1 00:00:16 kernel: Serial: 8250/16550 driver $Revision: 1.8 $ 2 por
Jan  1 00:00:16 kernel: serial8250: ttyS0 at I/O 0xb0000500 (irq = 37) i
Jan  1 00:00:16 kernel: serial8250: ttyS1 at I/O 0xb0000c00 (irq = 12) i
Jan  1 00:00:16 kernel: RAMDISK driver initiali
Jan  1 00:00:16 kernel: zed: 16 RAM disks of 16384K size 1024 blocksize
Jan  1 00:00:16 kernel: loop: loaded (max 8 devices)
Jan  1 00:00:16 kernel: rdm_major = 253
Jan  1 00:00:16 kernel: Ralink APSoC Ethernet Driver Initilization. v2.1
Jan  1 00:00:16 kernel: MAC_ADRH -- : 0x00000866
Jan  1 00:00:16 kernel: MAC_ADRL -- : 0x010007c1
Jan  1 00:00:16 kernel: PROC INIT OK!
Jan  1 00:00:16 kernel: IMQ starting with 2 devices...
Jan  1 00:00:16 kernel: IMQ driver loaded successfully.
Jan  1 00:00:16 kernel:    Hooking IMQ before NAT on PREROUTING.
Jan  1 00:00:16 kernel:    Hooking IMQ after NAT on POSTROUTING.
Jan  1 00:00:16 kernel: PPP generic driver version 2.4.2
Jan  1 00:00:16 kernel: PPP BSD Compression module registered
Jan  1 00:00:16 kernel: NET: Registered protocol family 24
```

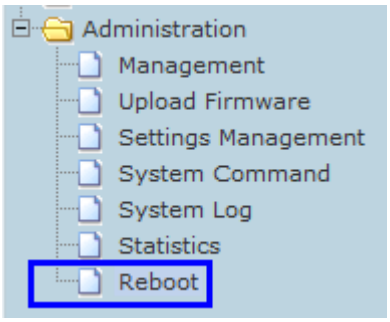
3.3.14.6 Statistics

Memory	
Memory total:	60684 kB
Memory left:	31960 kB
WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	6
WAN Tx bytes:	492
LAN Rx packets:	6093
LAN Rx bytes:	400006
LAN Tx packets:	6120
LAN Tx bytes:	1107041

All interfaces	
Name	eth2
Rx Packet	6137
Rx Byte	513803
Tx Packet	6134
Tx Byte	1139410
Name	ra0
Rx Packet	117309
Rx Byte	32422543
Tx Packet	1443
Tx Byte	0
Name	eth2.1
Rx Packet	6127
Rx Byte	427889
Tx Packet	6127
Tx Byte	1132011
Name	eth2.2
Rx Packet	0
Rx Byte	0
Tx Packet	6
Tx Byte	492
Name	br0
Rx Packet	6128
Rx Byte	404417
Tx Packet	6158
Tx Byte	1130413
Name	ppp0
Rx Packet	10
Rx Byte	160
Tx Packet	9
Tx Byte	168

Display the statistics information of system flow.

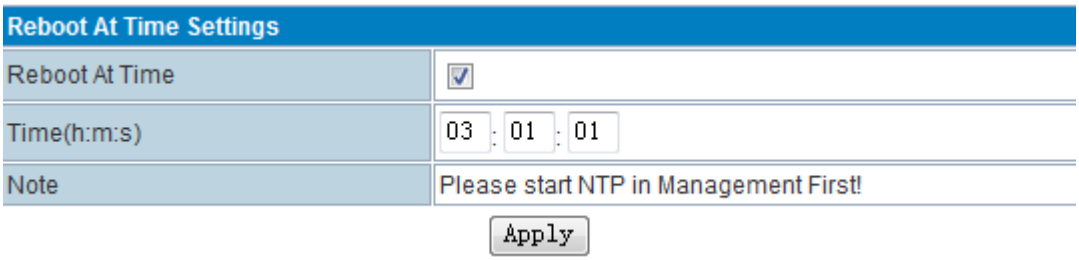
3.3.14.7 Reboot



Question: Why to use Reboot Feature?
Answer: Router is similar a computer, whose performance depends on hardware and software. The Router's performance becomes weaker after very long time working. With reboot, it will refresh the performance.
Question: Is necessary to use the Reboot Feature?
Answer: Not really. Our router has high reliable and stable performance. It not requires using reboot feature compulsively. However, Reboot Feature will double ensure the router to be more stable and reliable.

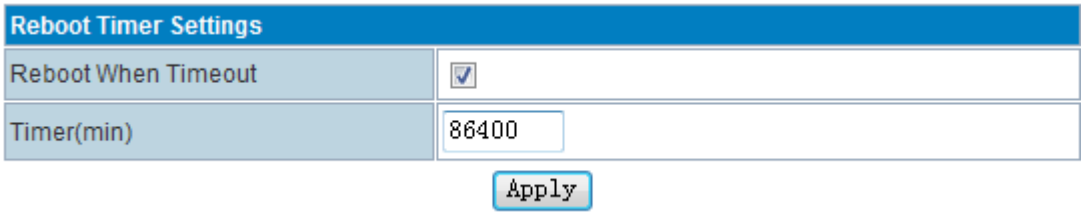
H720 Router support three types of Reboot Feature.

- **Reboot AT Time Settings**



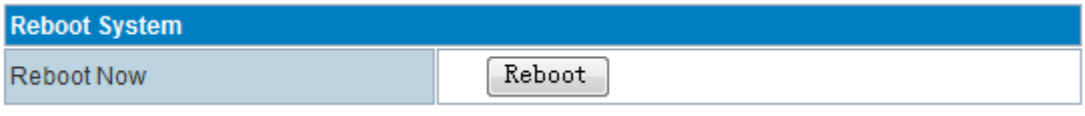
Users can define the exact time to reboot for everyday.

- **Reboot AT Time Settings**



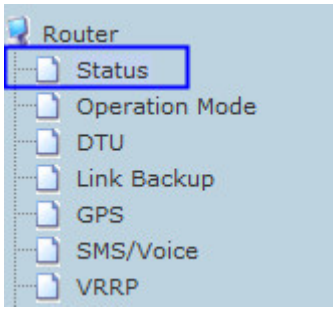
Users can set timer to reboot.

- **Reboot AT Time Settings**



Manually click "Reboot" button to reboot immediately.

3.3.14.8 Status



System Info	
Series	H820
SN	086412100296
Software Version	2.2.13 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	1:41
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	355858040246813
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2
Sub Network Type	WCDMA
Signal	13
Cell Status	UP

Internet Configurations	
Connected Type	CELL
WAN IP Address	172.17.194.232
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:07:C0
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:07:C1

IPSEC Status	
Name	Status
PPTP Status	
PPTP	down
L2TP Status	
L2TP	down

From this page you can see the Router's basic running state.

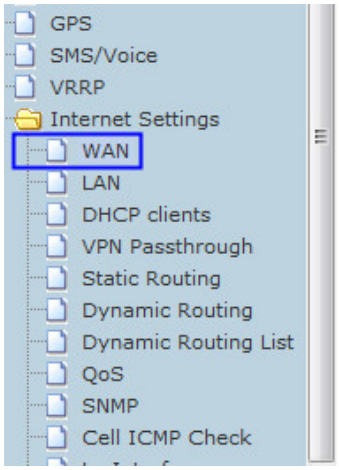
- **Ethernet Port Status**

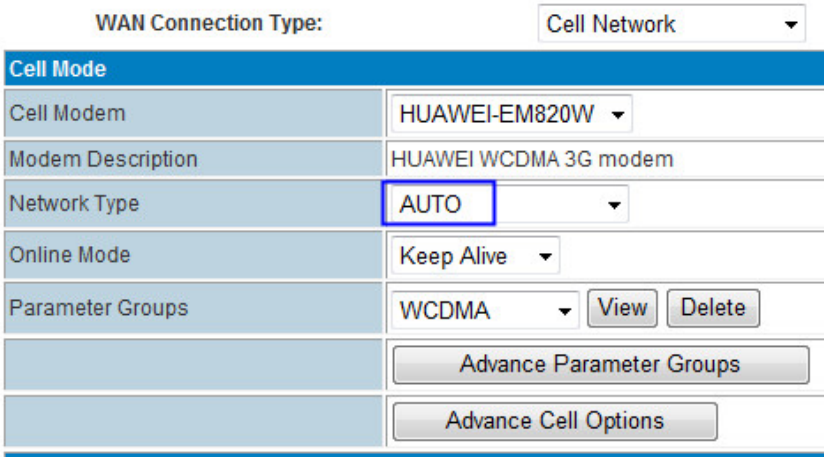
- **System Info**

- **Product Model**: indicates the model name
- **SN**: indicates the product SN
- **Software Version:** software version reveals the status of software update.
- **Hardware Version**: indicates the hardware version
- **System Up Time:** this time directly reveals router working hours
- **Operation Mode:** indicates the router working mode

- **Cell Network Info**

- **Cell Modem:** indicates inside cellular module modem name
- **IMEI/ESN:** indicates IMEI or ESN info of inside cellular module modem
- **Sim Status:** indicates sim card status
- **Selected Network:** indicates the selected working network

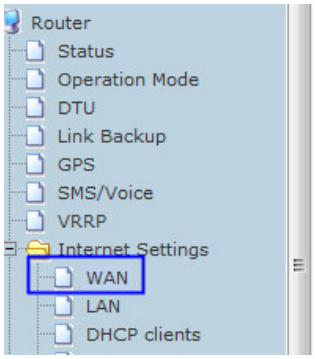


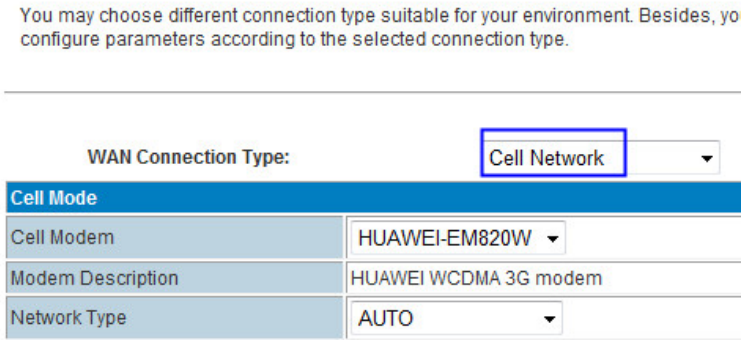


- **Registered Network:** indicates the current working network carrier ID
- **Sub Network Type:** indicates the current working network type
- **Signal:** reveals the current network state of 2G/3G. 0 and 99 mean no signal.
- **Cell state:** indicates the cellular is online or offline

➢ **Internet Configurations**

- **Connected Type:** indicates the selected WAN type.





- **WPN IP address:** the IP expose when the router gets on internet.
- **Primary Domain Name Server**: indicates the primary DNS of set or from ISP.
- **Secondary Domain Name Server**: indicates the secondary DNS of set or from ISP.
- **MAC Address**: indicates the WAN MAC address

➢ **Local Network**

- **Local IP address:** the H720 Router LAN IP
- **MAC Address:** the LAN MAC address

➢ **VPN Status**

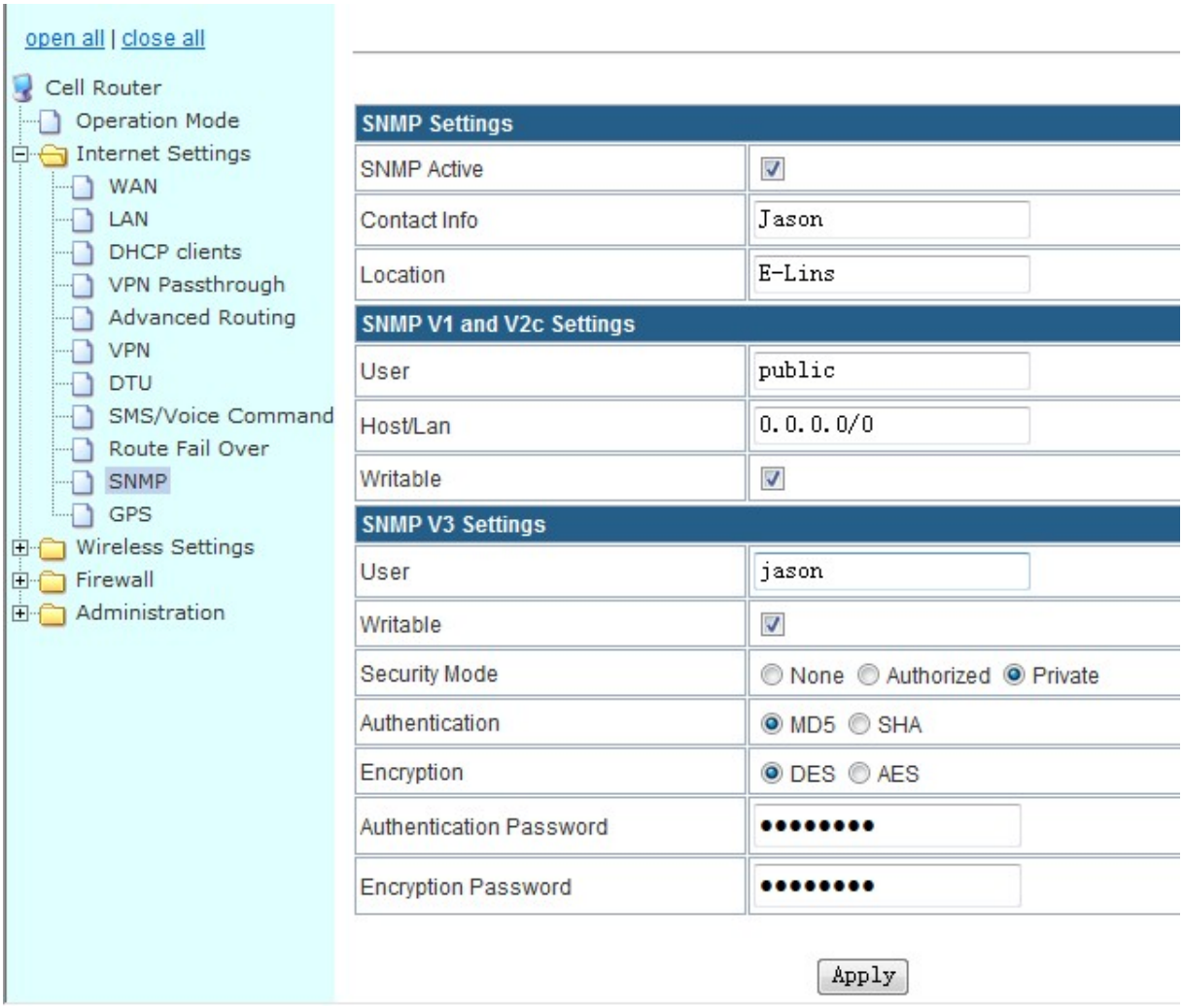
- **IPSEC Status:** indicates IPSEC status info
- **PPTP Status:** indicates PPTP status info
- **L2TP Status:** indicates L2TP status info

3.3.15 SNMP (For version with SNMP only)

Notes: SNMP feature is for H720 Router with SNMP option only.

Soft tool download link:
http://www. szelins.com/download/tool/SNMP-JManager-v1.0.rar

H720 router web page – Internet Settings – SNMP
Fill in related parameters in the screen like follows,



SNMP Active: tick it to active SNMP feature.
Contact Info: set the contact info here
Location: set router's installation address.

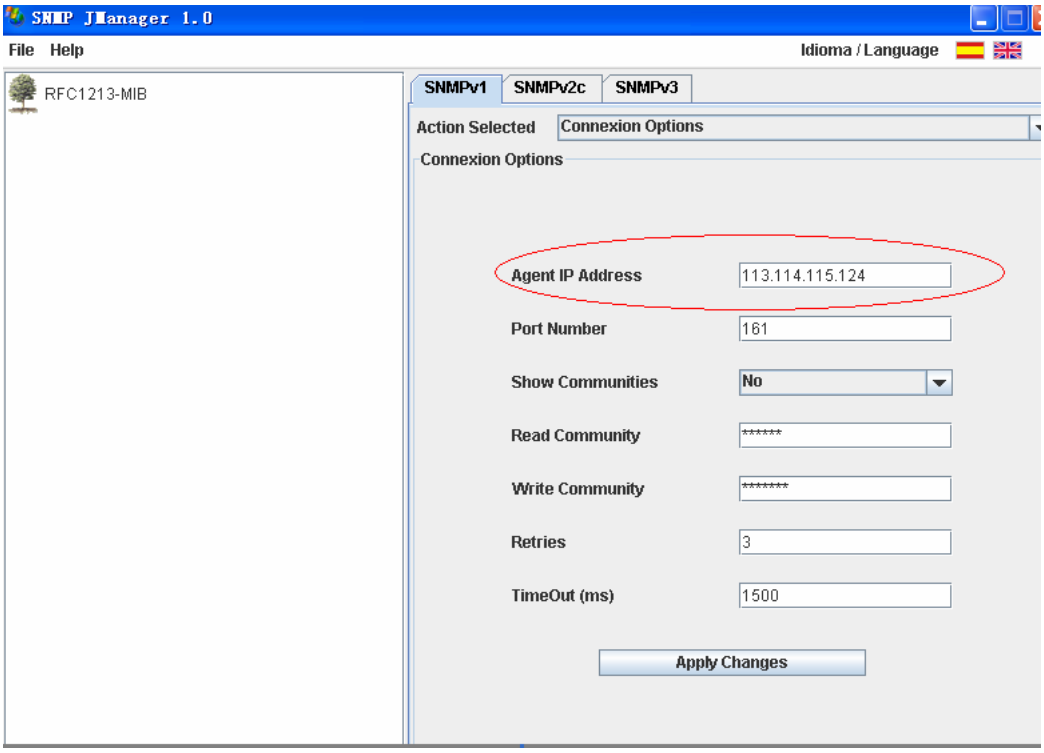
User: set public name
Host/Lan: set the network range to visit the router via SNMP, default we set all as 0.0.0.0./0
Writable: tick it to enable it.
Security Mode: choose the correct one, only for SNMP V3 version.
Authentication: choose the correct one, only for SNMP V3 version.
Encryption: choose the correct one, only for SNMP V3 version.
Authentication Password: fill in the right one.
Encryption Password: fill in the right one.

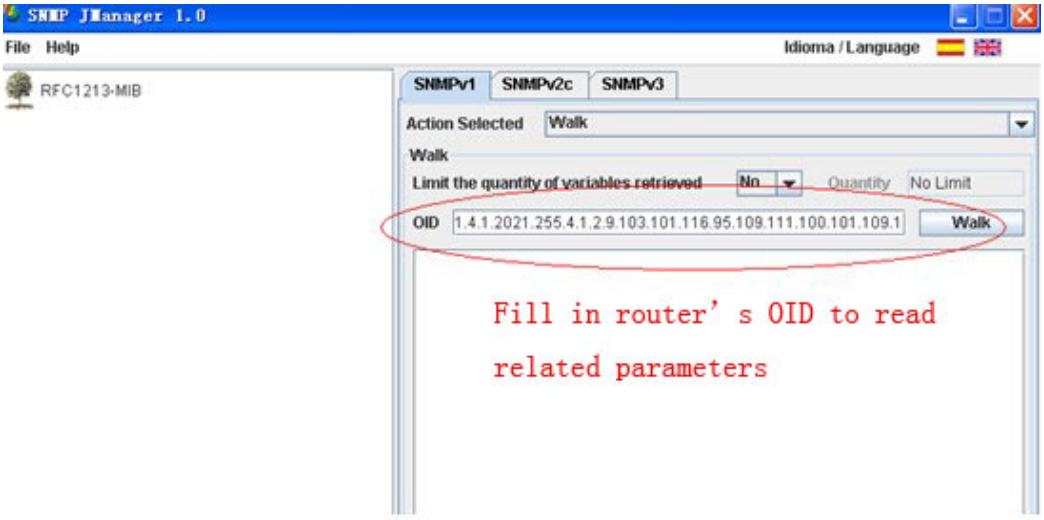
Click “Apply” button and reboot the router.

Here list the most important OID:

1.3.6.1.4.1.2021.255.4.1.2.9.103.101.116.95.109.111.100.101.109.1
(read module modem model)
1.3.6.1.4.1.2021.255.4.1.2.10.103.101.116.95.117.112.116.105.109.101.1
(system running time)
1.3.6.1.4.1.2021.255.4.1.2.12.103.101.116.95.109.101.109.95.102.114.101.101.1
(memory capacity)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.99.101.108.108.95.115.116.97.116.117.115.1 (3G network status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.108.50.116.112.95.115.116.97.116.117.115.1 (pptp status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.112.112.116.112.95.115.116.97.116.117.115.1 (l2tp status)

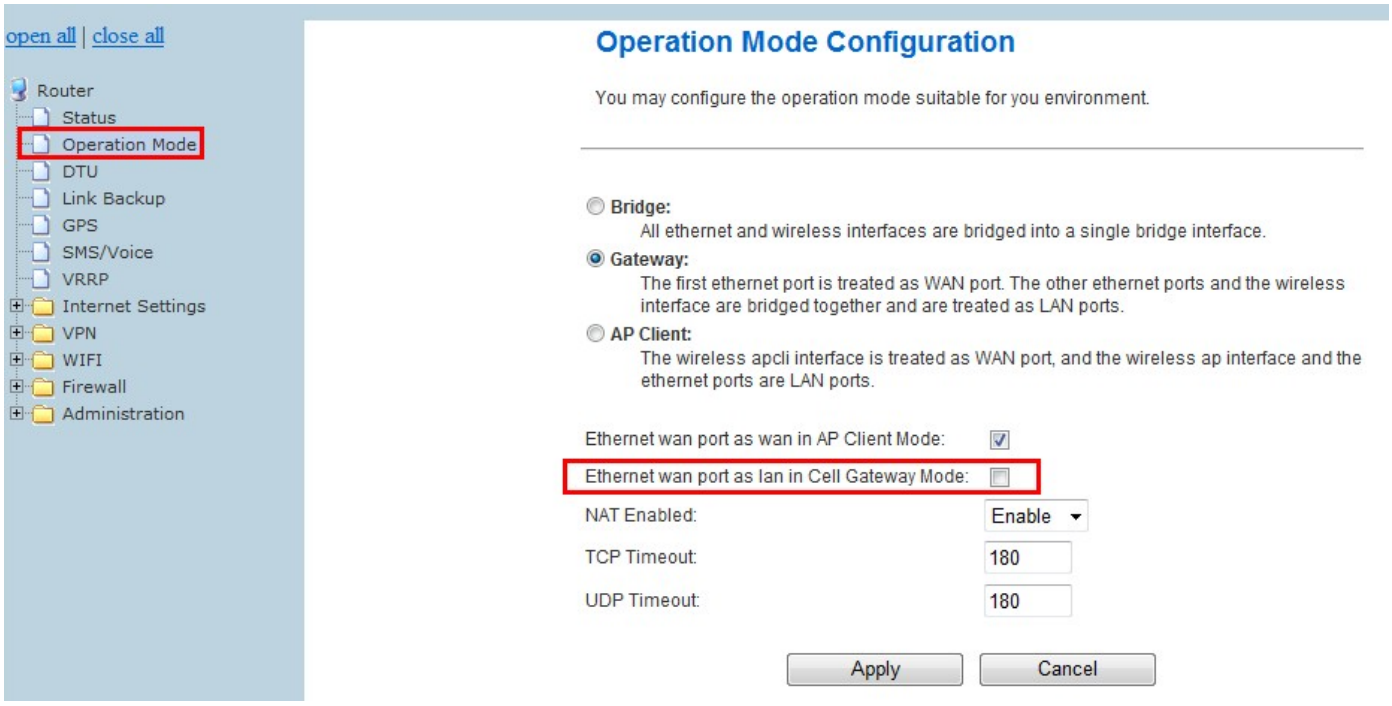
List client side’s picture as follows,



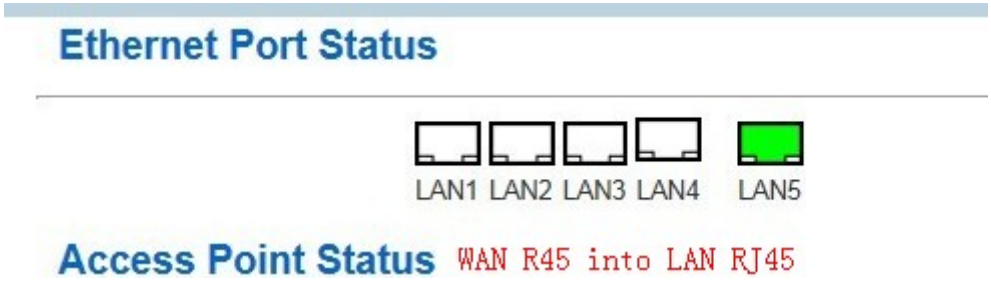


3.3.16 Convert the WAN RJ45 port to LAN RJ45 port

Notes: with this settings, the H720 router has no WAN RJ45 port, just 5 LAN RJ45 ports.



Check the “Ethernet WAN Port as lan in Cell Gateway Mode:”, click the “Apply” button, the WAN RJ45 will switch into LAN RJ45. Please re-boot the router. The router will display the status as follows,



Chapter 4

4 FAQ

4.1 Open Device Error

3G Info	
Signal Strength	open device error!

With this error, most of time the module inside the router is loosen. Please try to fasten it.

4.2 Read Error

3G Info	
Signal Strength	read error!
Attachment State	Automatic search

With this error, it indicates the sim card is not well touched with sim card slot. Try to check the sim card is right put. Try to scrap the sim card slot and make it clean.

4.3 Signal Strength has right number, but cannot dialup

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Try to check the WAN port setting is correct.

4.4 Signal Strength shows 99

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Here it shows 16, it means signal is okay. If shows 99, try to check the sim card is has enough balance. Or if the data business is supported.

4.5 The router cannot be remote web visited

1) Default the router's web port is 80. Some network ISP block the 80 of incoming. So confirm with your ISP which port can be visited. Or you can change other port to try, such as port 10000. Refer to *chapter 3.3.14.1.1* Router web port to operate.

2) Check if the router's WAN IP can be ping through via the PC.

4.6 Signal shows 99 but still can connect to internet and get WAN IP

Our router built-in different types of modem inside, some modem cost this. But will not affect the use.

4.7 Router shows sim card and network info, but cannot connect to internet

Check the sim card is with balance or limited service by the ISP.

4.8 DDNS not working

1) Please confirm the DDNS configuration is correct.
2) Check if the router is online and get IP, and can visit internet.
3) Check if the WAN IP from sim card (shows in the status page once the router is online) is a public IP or privacy IP, privacy IP will make DDNS no work.

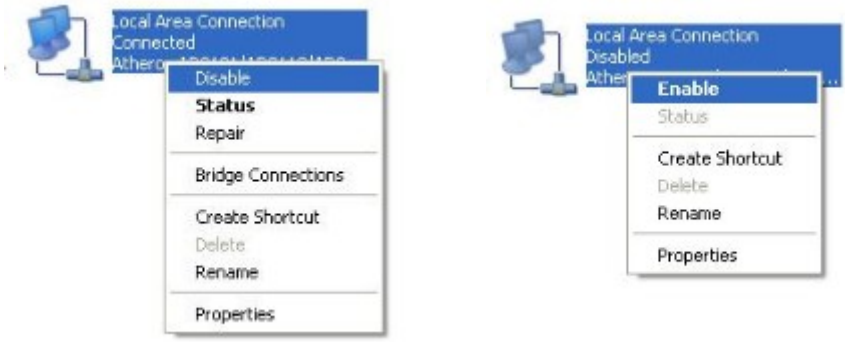
4.9 Cannot Connect Router via RJ45 LAN

1) Please check if Ethernet cable is correctly connected.
2) Double check PC network card IP is correct configured. Please refer to *Chapter 3.2*
3) Try to disable the PC network card, and re-enable it.

4) Reset the H720 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H720 router will automatically load default.

4.10 Cannot Connect H720 WiFi

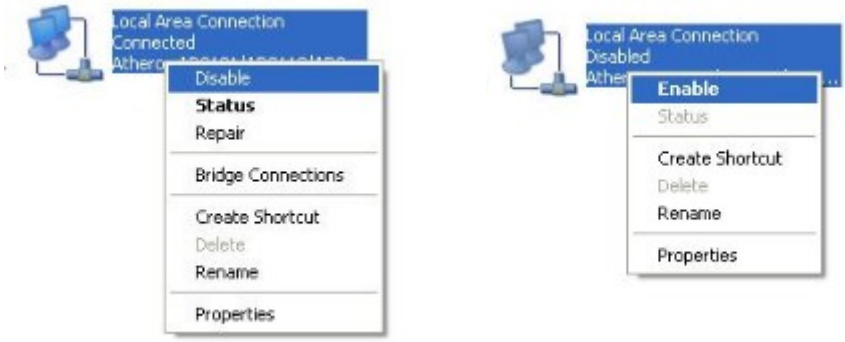
1) Double check if the device’s WiFi switch is on.
2) Double check if the H720 WiFi is on.
3) Double check Device’s wireless network card IP is correct configured. Please refer to *Chapter 3.2*
4) Try to disable the Device’s network card, and re-enable it.



5) Reset the H720 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H720 router will automatically load default.

4.11 Can Connect H720 WiFi via Manual IP but cannot via DHCP

1) Try to disable the Device’s network card, and re-enable it.



2) Reset the H720 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H720 router will automatically load default.

4.12 Cannot get Cell WAN IP

H720 Router get cellular WAN IP once it’s online.

Internet Configurations	
Connected Type	CELL
WAN IP Address	10.193.205.114
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:04:A0

If not get the WAN IP, the problem maybe:

Item.	May caused by	Solution
1	Cellular WAN port is not right configured	Refer to Chapter 3.3.3.1 Cellular WAN configuration to solve it.
2	SIM card has problem for data business or no balance	Check the sim card with the ISP or network provider or sim card provider. Try another working sim card.
3	No network signal	Move the router to another site to check.
4	VPN configuration is wrong	You may configure the VPN in wrong way. Please check the WAN port configuration.
5	Cellular network problem	Sometimes cellular network may get problem or unstable. Try to move to another site to test. Or try to test with another ISP/Carrier SIM card
6	Module modem is defeated	Send back the unit to factory for repair

4.13 Can not power on

Solution:

1. Check if the power adapter connector is loose from the router.
2. Try to replace a power adapter. H720 series router uses 9V1A or 9V2A or 12V1A or 12V1A or 12V2A power adapter with 2.5mm connector
3. Router hardware defeated. Send back to factory for check or repair.

4.14 Sys log shows “connect script failed”

Problem maybe:

Item.	May caused by	Solution
1	A. sim card no data business, or problem;	A. Check sim card data business and balance. B. Get balance available

	B. sim card balance no available;	
2.	WAN APN parameter is wrong	Check APN parameter of WAN port, then make it correct and try
3	Network unstable problem	Try later, or move to other network to try.
4	Module modem inside router setting wrong by uncertain operation	Tell the module modem type (marked at the back cover of router) to technical support for help.
5	Module modem inside router only support 2G or 3G only	Need contact sales for replacement or repair

4.15 H720 Router is online, but cannot visit website.

Problem maybe:

Item.	May caused by	Solution
1	DNS problem	Check the DNS server of H720 is correct. The DNS is from the ISP once H720 is online. Sometimes the ISP not give the right DNS server IP, you can try to set correct DNS manually at your PC or Device network card.
2.	SIM card business problem	Check APN parameter of WAN port, then make it correct and try. Double confirm with the ISP/Carrier if the sim card info is 100% correct. Try to change another sim card to try.
3	Signal is too weak	Too weak signal may cause all the DNS resolution fails. Try to get better signal.
4	Network is too bad	Contact ISP/Carrier to get better network

4.16 Port forwarding not working

Question: I configure the port forwarding feature correctly, but still no work.
Answer: first, please check the port if block by your ISP/Carrier, because some ISP/Carrier block some ports for security reason.
For example, the H685m gets WAN IP 27.38.14.223. And the H720's web port is 80. So from the other network, try to visit http:// 27.38.14.223:80 if can be okay. If no okay, it means the ISP/Carrier blocks the 10000 port. Then check with your ISP/Carrier which ports are open for use. Then re-try the port forwarding feature.

4.17 Serial DTU point-to-point solution not working

Problem: Take two H720. Both support Serial to cellular gateway feature (DTU feature). Configure one as client, the other as server. But no work.
Answer: First, we confirm that the H720 both are online, and the server's IP is public IP that can be ping through from other networks.

Second, we confirm both H720's DTU feature (Serial to Cellular Feature) are working. We test an example as follows,

H720 DTU with vodafone SIM as client (in Germany)--- China Telecom as server (In China): working
H720 DTU with vodafone SIM as server (in Germany)--- China Telecom as client (In China): working
H720 DTU with vodafone SIM as client (in Germany)---- H720 DTU with Vodafone SIM as server (in Germany) : no working

This indicates the two Vodafone SIM cards cannot communicates each other. The Vodafone ISP limit the two internal's SIM card's communication.

You have two ways to solve the problem.
1) Get another SIM card from another ISP to test.
2) Ask the Vodafone ISP to unlimit two Vadafone SIM's communication.

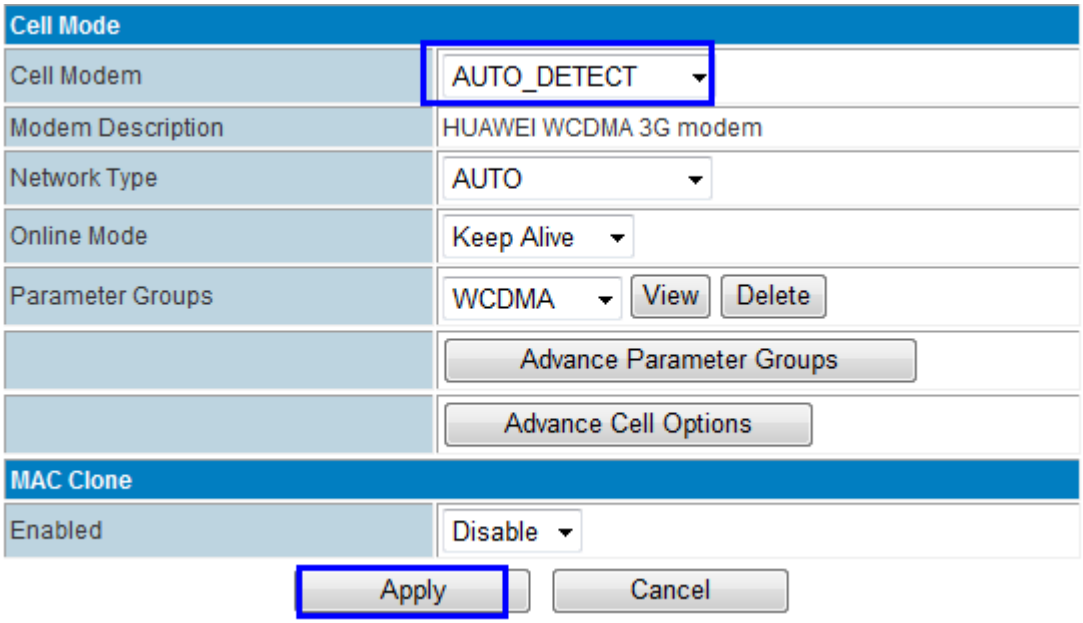
4.18 Can't open device /dev/ttyUSBx.

Problem: Status page shows "Can't open device /dev/ttyUSBx".

Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	Can't open device /dev/ttyUSB3.
Sim Status	Can't open device /dev/ttyUSB3.
Selected Network	AUTO
Registered Network	Can't open device /dev/ttyUSB3.
Sub Network Type	Can't open device /dev/ttyUSB3.
Signal	Can't open device /dev/ttyUSB3.
Cell Status	DOWN

Solution:
Step 1) H720 Router Web – Internet Settings – WAN, at Cell Modem, please choose "AUTO_DETECT" and click "Apply" button.

Step 2) If step 1 cannot solve the issue, try to open the case, and scrap the module modem fingerprint, then re-install it into the mini PCIe slot. And try Step 1) again.



Step 3) If the issue is still existed after Step 1) and Step 2), please contact our sales for return to check or repair.

4.19 PPTP is on, but cannot be through to PPTP Server

Issue and phenomenon: in web status page, the PPTP shows “on”, but try to ping PPTP Server, cannot get through.

Solution:

1) try to check if the PPTP Status keep “on” in web status page. If sometimes “on”, and sometimes “down”, please check the PPTP configuration is correct.
2) Check if the PPTP Server assigned remote LAN with H720’s LAN IP network range. H720 default LAN IP is 192.168.8.1, and submask is 255.255.255.0. Sometimes the users forget to assign remote LAN IP 192.168.8.1 for PPTP VPN Server.
   If the PPTP VPN Server’s remote LAN IP is 192.168.1.0/24 or 192.168.0.0/24, and cannot be changed, please change H720 LAN IP from 192.168.8.1 to 192.168.1.1 or 192.168.0.1, also do not forget to manually change the H720 Default Gateway to 192.168.1.1 or 192.168.0.1 meanwhile.

3) with the following steps, normally it can solve the issue. Otherwise, please contact E-Lins Sales or Support.